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All communications to be addressed:

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T. PASCOE,

*Minister of Agriculture.*

## POINTS FOR PRODUCERS.

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### Classification of Australian Wheats.

The Seed Improvement Committee of the Institute of Science and Industry, which was formed with the object of dealing with the problems involved in the nomenclature of cultivated varieties of farm crops, the exchange and dissemination of seed samples for research work, the elimination of undesirable varieties of crops, and the improvement of seed and introduction of improved varieties, has issued a bulletin containing a classification and detailed description of some of the wheats of Australia. This bulletin, copies of which can be obtained on application to the secretary of the institute, Melbourne, deals, in Part I., with the classification, and gives a detailed description of the characters which may be used to divide the varieties into classes and types, and an account of the classes which are formed on these characters. Part II. gives a short botanical description of the different species of wheat under cultivation in different parts of the world. Part III. describes in detail the 46 best known varieties grown in the Commonwealth.

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### Insects and Birds.

No species of vegetation seems immune from the attacks of some form of insect life, found in every possible form and situation, from the smallest caterpillar in the bud or curled-up leaf, myriads of flying pests, to the grub in the ground, which is eating away at the roots of the plant. Man has invented many wonderful machines to do all kinds of work, but he will never invent anything for the destruction of insect pests equal to the bird's bill. These little unpaid workers are doing the work no mortal hands can do, and the different species are working both by day and by night.—Captain S. A. White, C.M.B.O.U.

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### Wheat.

There is no department in which prophecy is more dangerous than that of food supply, but in view of the fact that under the most favorable view the world will only get through the year 1920-21 in virtue of the American surplus, and that every civilised country shows the same phenomenon of a withdrawal of labor from the land, we cannot escape from the conclusion that wheat will be short in the world for some years to come—so short that any bad crop in one of the great producing countries may result in something like famine conditions.—Sir Daniel Hall, K.C.B., F.R.S.

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### Farmers' Day at the College.

It is usual on the Monday following the Spring Show for farmers to be given the opportunity of visiting the Roseworthy Agricultural College. The fixture has always been a popular one, and many

farmers from all parts of the State make it a practice annually to visit the State Agricultural College, and in this way keep in touch with the work that is being done there. The party that visited the college on September 20th was a representative one, and included His Excellency the Governor (Sir W. E. G. A. Weigall, K.C.M.G.), the Minister of Agriculture (Hon. T. Pascoe, M.L.C.), the Director of Agriculture (Professor Arthur J. Perkins), and other officers of the Agricultural Department. On arrival, the visitors transferred from a special train to various vehicles temporarily doing service as drags, and in these were driven round the crops. The general opinion was that the crops had never looked better than they did on this occasion. After lunch the stock and farm buildings were inspected.

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#### London Apple Prices.

On and after November 15th the prices of all imported apples bought and sold on the London market have been fixed as follows:—When sold in packages—Nova Scotia apples, maximum prices at the rate of 62s. per barrel containing not less than 112lbs.; Canadian Maine, Virginian, and Western States apples, 68s. per barrel containing not less than 120lbs.; British Columbian, Washington, Californian, Oregon, and Australasian apples, 21s. 6d. per case containing not less than 37lbs.; British Columbian, Washington, Californian, Oregon, and Australasian apples, 23s. 6d. per case containing not less than 40lbs.; any variety of imported apples sold otherwise than in the package mentioned above, 60s. per cwt. No additional charges may be made for any package. The retail price is 10d. per lb.

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#### Imports and Exports of Fruits, Plants, Etc.

During the month of August, 1920, 6,563bush. of bananas, 1,088bush. of fresh fruits, 25,306 bags of potatoes, 5bush. of cucumbers, 40 packages of seeds, 24 packages of plants, 77 packages of trees, and 1,094 empty wine casks were examined and admitted at Adelaide and Port Adelaide under the Vine, Fruit, and Vegetable Protection Acts, 1885 and 1910. Of these 2bush. of lemons, 77 packages of trees, and 8 empty wine casks were fumigated.

Under the Federal Commerce Act, 1,398 packages of citrus fruit, 9,885 packages of dried fruit, 280 packages of preserved fruit, 66 packages of jam, and 1 package of honey were exported to oversea markets. These were consigned as follows:—For London, 23 packages of citrus fruit, 6,168 packages of dried fruit, and 1 package of honey; for New Zealand, 1,375 packages of citrus fruit, 2,122 packages of dried fruit, 250 packages of preserved fruit, and 6 packages of jam; for South Africa, 80 packages of dried fruit; for U.S.A., 1,390 packages of dried fruit and 60 packages of jam; for India and East, 125 packages of dried fruit and 30 packages of preserved fruit. Under the Federal Quarantine Act, 1904 packages of seeds, &c., were examined and admitted from oversea sources.

## INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by F. MURRAY JONES, B.V.Sc., M.R.C.V.S., Assistant Government Veterinary Surgeon.]

"E. H. W.," Percyton, has horse with growth on hind leg, from the hoof to fetlock. Has appearance of greasy heel.

Reply—This condition is the result of chronic grease, and is more or less permanent in character. It is not advisable for you to burn or cut it away. Try the following dressing:—Formalin, 1 part; methylated spirits, 5 parts; glycerine, 10 parts, and mix. Apply daily with an old paint brush. Frequent washing is inadvisable. Keep as dry as possible. If he is not lame he may be kept at work.

"W. A. S.," Geranium, has draught horse lame in near side front leg. Joint is swollen between knee and fetlock.

Reply—The probable cause of lameness is a sprain, and I advise you to keep him out of work and use cold water irrigation to the leg from the knee downwards for about half an hour twice a day. It is always desirable to thoroughly examine the foot. You might repeat this examination when the horn is soft after the application of cold water.

"P. G. W.," Elbow Hill, reports horse with lumps on shoulder, although the animal has not been worked for some time.

Reply—This may have been due to injury whilst working, although not showing at time. Blister part, and if it points open with clean sharp pocket knife. Afterwards use suitable disinfectant to cleanse part.

"C. H.," Halidon, has mare continually lying down and sits on haunches, and when standing stretches out full length. Keeps on throwing head back and eats very little food.

Reply—Probably a case of impaction. Give soapy injections, and the following internally:—Carb. ammonia, 2ozs.; powdered nux vomica, 1oz.; make into three balls and give at same time. Follow in an hour with 1 pint raw linseed oil, 1oz. turpentine, and 1oz. spirits ammonia aromatic. Food to be green and laxative.

"W. P.," Cleve, asks remedy for horses and cows troubled with lice.

Reply—Animals kept under good conditions of feeding and grooming should soon be freed of them. In the meantime apply the following application:—Water, 1gall.; kerosine, 1 pint; soap, 1lb. Make soap solution by adding 1lb. soap, carefully shaved into 1gall. boiling water, stir and add kerosine until of creamy consistency. Apply with brush, leave on till fourth day, wash off and reapply if necessary.


"G. E. McG.," Bordertown, asks remedy for horses with boils on shoulders and withers.

Reply—Give each animal 1 pint raw linseed oil. Bathe skin of affected parts with sulphate zinc, 1oz.; lead acetate, 1oz.; water, 1 quart.

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"W. B. W.," Clement's Gap, reports mare with growth about the size of pigeon's egg on the eyelid; growth is discharging matter.

Reply—These growths are usually malignant, the only satisfactory treatment is surgical removal. Non-irritating disinfectant lotions such as boracic acid are useful in keeping the parts clean, but have no curative effect. Irritating applications such as bluestone, kerosene, &c., may be harmful. They cause a good deal of pain and irritation, and may stimulate instead of retarding the growth. Where the discharge from the eye is foetid in character, and where there is also a discharge from the nose, it may indicate disease of the bone, and in this case treatment may be unavailing.

"G. L. S.," Cleve, has mare four years old, severe harh wire cut on the hock. Limb is swollen and wound discharging matter.

Reply—Wounds in this region are always serious, and often result in more or less stiffness of the joint due to inflammation and consequent thickening. Discontinue the use of embrocation. Apply warm fomentations and dress twice daily with carbolic acid, one tablespoonful to a pint, and dust with the following powder:—Iodoform, 1; boracic acid, 2; zinc oxide, 2 parts. Do not let her use the leg much for the next few weeks.

"F. W. S.," Melrose, has killed a sow. An inspection of the liver showed a number of white hard lumps which, on being opened, exuded a white substance. Blue lumps were also found on the ribs.

Reply—The disease is probably tuberculosis. The flesh is unfit for food and should be destroyed.

Agricultural Bureau, Blackheath, asks (1) why some horses after about two hours' work breathe very quickly, particularly during fallowing time, and (2) what means could be adopted to prevent horns growing on Merino ewe lambs?

Reply—(1) Probably due to absence of good working condition. Do not work too soon after feeding. Preferable to feed four times daily. (2) The early application of caustic potash. This can be obtained in the form of a pencil. Handle carefully. Moisten the part and apply the caustic where the horn bud appears.

"G. H. F.," Paruna, has cow stiff in legs, skin hard, nose dry, tucked up appearance.

Reply—A case of indigestion. Give purgative drench, such as Epsom salts, 1lb.; treacle, 1 cnpful, in a quart of lukewarm water.

"J. B.," Georgetown, reports finding a grub inside the horns and head of sheep.

Reply—The sheep bot fly, *Oestrus ovis*, is rapidly spreading all over the State and, unfortunately, nothing can be done to prevent it. The female fly deposits her eggs about the nostrils of the sheep, the larvae crawl up into the nasal cavities and finally reach the sinuses, where they remain for eight to 10 months during their development. The irritation produces frequent attacks of sneezing, accompanied by a discharge from the nostrils. Where bots are present in large numbers in the early spring they cause symptoms similar to "gid" or "sturdy." The bodily movements of affected sheep become spasmodic and the gait irregular, with frequent attacks of vertigo. Many stagger and fall, roll their eyes, grind their teeth, and discharge frothy saliva from the mouth. Deaths occur, but are not frequent. The loss of condition is serious. The bots can only be removed by trephining.

"R. Bros.," Sevenhills, reports young heifer, difficulty in calving. Womb was ejected, but has now been replaced, but the animal has trouble when passing water.

Reply—The symptoms given would indicate that in returning the womb some displacement or twisting has resulted. It would be necessary to examine the animal before an exact diagnosis could be made. I think it would be safer to fatten her off, owing to strong probability of serious complications supervening if again bred from.

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"J. J. C.," Coonalypn, reports mare in very poor condition. Breathes rapidly, and breaks out into a sweat, also froths at the mouth. Dung loose, irregular, and in small lots.

Reply—Your animal appears to be suffering from an attack of enteritis. Give ½oz. cannabis indica in a ball, or 1oz. chloral hydrate dissolved in a pint of water. Repeat in four hours if required. If swelling with gas formation give 2ozs. oil of turpentine in pint linseed oil. Foment abdomen with warm water. Administer enemas of warm water and soap dissolved. Feed small quantities, linseed mashes with small quantities of bran. Afterwards, small quantities green feed. Avoid dry foods.

### LUCERNE.

#### QUESTIONS AND ANSWERS.

These questions were received from a landholder in the Milang district, who was supplied with the following replies by the Superintendent of Experiments (Mr. W. J. Spafford):—

1. My plot of lucerne is 20 years old and very thin. How can I revive it?

Your lucerne plot, after having been so long under that crop, would naturally have run its course some time ago, and have passed the profitable stage, and the only way to revive it is to replant the land.

2. If I have to replant, what is the best way to do it?

It is quite common experience that it is very difficult to get a good stand of lucerne on land recently under this crop, and it is the usual practice, and a wise one, thoroughly to plough the land and grow one or two crops other than lucerne, such as wheat or any of the cereals, before resowing the land with lucerne.

3. The land is sandy, and I can irrigate it. When should the lucerne seed be sown?

In your conditions I would say prepare the land for cereals and grow a hay crop on it next year, and as soon as this crop is cut, rip up the land again, and have it ready to sow lucerne by the end of February. If favorable rains fall in March you should broadcast the seed then, but in any case you should germinate the seed, by irrigation if necessary, before the end of April.

4. I have some stable manure. What other manures are necessary?

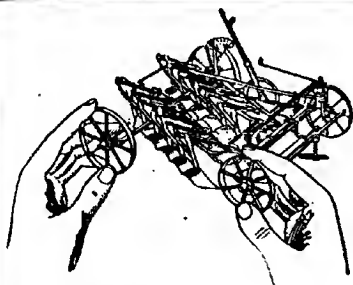
On your sandy soil you cannot do better than apply all available farmyard manure, but some superphosphate should be applied as well. To any parts of the land not dressed with farmyard manure, an application of at least 2cwts. superphosphate per acre should be given, and should prove all that is necessary for a first application of fertiliser.

5. What is the best variety of lucerne to grow in this district?

It is doubtful if any variety of lucerne on the market will give you better results than good Hunter River seed.

6. How much seed per acre should be used?

For a crop of lucerne which is to be irrigated, the best results are likely to be secured if somewhere about 20lbs. of seed per acre are used at seeding.



## **SMITH'S**

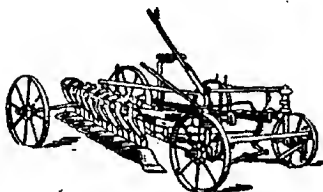
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## DEPARTMENTAL DOINGS.

### AMONG THE AGRICULTURISTS.

The increasing interest which agriculturists are taking in the work of the Department of Agriculture is perhaps evidenced in no way so strongly as in the demands that they are making on the services of the various officers. The Agricultural Bureau system not only enables the department to gauge the pulse of the agriculturists' requirements, but it has been the basis of a mutual understanding and confidence. And so the man on the land seeks the guidance of the department, and if at times the demand is so heavy as to prove somewhat embarrassing to officers, it also emphasizes the fact that South Australian agriculturists are alive to the value to them of expert guidance in their farming operations.

The most important fixture for the month of September is, of course, the Annual Congress of the Agricultural Bureau, and the thirty-first gathering, which was held this year, can be written down as one of the most successful in the history of the Bureau.

Amongst other gatherings worthy of mention in a brief survey of the month's operations of the department is the Annual Conference of Hills Branches of the Bureau, held at Blackwood on September 13th, which was attended by the Minister of Agriculture (Hon. T. Pascoe, M.L.C.), the Director of Agriculture (Professor A. J. Perkins), Capt. S.A. White, C.M.B.O.U., Mr H. Wicks (member of the Advisory Board of Agriculture), Mr. G. Quinn (Horticultural Instructor), and the Acting Secretary of the Advisory Board (Mr. H. J. Finnis).

### GENERAL AGRICULTURE.

At the invitation of the Bedford Park authorities the Director of Agriculture (Professor Arthur J. Perkins) during September inspected the milking herd and agricultural operations connected with the institution. The Director also visited Jamestown and Bundaleer, was driven round the district by local residents, and delivered an address on "Mixed Farming" in the evening.

The Superintendent of Experiments (Mr. W. J. Spafford) addressed the members of the Wall Branch of the Agricultural Bureau on ensilage crops, and the Wilkawatt Branch on matters dealing with the local experimental plots. He also inspected the experimental plots at Hammond and Coonalpyn, and visited the Experimental Farm at Minnipa.

### PLANT, BUILDINGS, ETC.

The Field Engineer (Mr. J. Paull) has during the month supplied plans of the layout of stables, chaffhouse, &c., to Mr. T. A. Helling (Tintinara); stock plans for reinforced concrete tanks to Mr. G. Henderson (South Hummocks); plans of 50-ton stone concrete silos to Mr. E. Nelson (Murray Bridge) and Mr. Cailles (Mypolonga); and information respecting the layout of pigsties to Mr. R. Wheaton (Kangaroo Island). A visit was made to Mr. W. Tregilgas (Wilunga), and advice given respecting water supplies for irrigation, and plans for a stone silo of 50 tons capacity supplied.

## HORTICULTURAL.

The Government Experimental Orchards at Berri and Blackwood have been visited during the month by the Horticultural Instructor (Mr. Geo. Quinn). At Berri several privately owned orchards were inspected, at the request of owners. With a view to ascertaining whether the tomato wilt disease was making an appearance, this officer visited some of the tomato growing areas around Lockleys and Underdale. Little or no evidence of the presence of the disease was found.

A pruning demonstration, and in the evening a lecture on the principles of pruning, were given at Ashbourne by Mr. C. H. Beaumont (Orchard Instructor), who also visited and addressed the Meadows Branch of the Bureau.

Mr. H. J. Apps (Assistant Dairy Expert) visited dairies and factories in the Eudunda, Jamestown, and Willunga districts, addressed the members of the Agricultural Bureau at Aldinga, and visited members of the Herd Testing Association in the vicinity of Murray Bridge.

## GENERAL.

The Acting Secretary of the Advisory Board (Mr. H. J. Finnis) during the month visited the Glossop and Two Wells Branches of the Agricultural Bureau, and delivered addresses, and also attended the Annual Conference of Hills Branches. Mr. F. C. Richards visited and addressed the members of the Younghusband Branch.

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SPRAYING.

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## AN ADDRESS GIVEN AT MURRAY BRIDGE AGRICULTURAL BUREAU.

[By C. H. BEAUMONT, Orchard Instructor.]

Before going into the actual process of spraying, it will be well to go back some years and look into the history of the subject, so that we may learn something of the reasons our forbears had for treating their trees by means of washes or dust.

From Biblical history we know certainly of many plagues of insects and diseases, and of the treatment thereof; we may, therefore, take for granted the fact that the use of remedies is not altogether a new art or practice.

On the other hand we must acknowledge that many of the older methods were quite wrong, and rested to a great extent on superstition. I remember reading of the practice, in the orchards in England, of firing guns in the apple trees on New Year morning, so that the attacks of the codlin moth might be warded off in the coming season. There was a great variety of so-called remedies, many more injurious than the

pest itself. Some of these were altogether grotesque; frequently filthy ideas were put forward (and some of these are in use at the present day), and with all of them the cause of the trouble was imperfectly known and was never properly attacked.

Orchard pests are almost numberless, each part of the globe having its specialities, and each family of pests its own preference. In South Australia we are fortunate compared with many other places. Many of these so-called pests would have been no trouble to us if we had not interfered with them first by taking away their usual food, as we do when we clear the land of scrub and forest and undergrowth. We are obliged to speak of many really useful insects as pests, because at times they overstep the line of their natural work, or are brought into other spheres of action foreign to them. But we must admit that in Nature all pests play a very useful part; they return useless material to enrich the soil, they prevent undue multiplication of various plants, as well as animals, and have many other useful qualifications.

Therefore before we decide on any method of treatment we are called upon to make a careful study of these enemies of ours, for only by observing their habits may we be successful in our after work. It is absolutely impossible to guard against the pests we have to consider by ordinary means, such as houses, fences, or netting, and we are driven to special methods, which we call spraying. This term is explained by the fact that we form, with appliances, a fine rain or mist of a fluid or semi-fluid over the trees or plants.

This peculiar practice has not been very long in use, probably within half a century. Before that time syringes and other means were in use, and it is probable that they were used from the time when the cultivation of plants was seriously engaged in, the idea being to clean the plants from dust or dirt so as to make them more attractive. This would naturally lead to trying to overcome the depredations of insects or fungi, for the same reason that it was desirable to have bright and pretty flowers, plants, trees, and fruits.

There is but little doubt that we have learned a great deal from the haphazard methods of olden days. Many materials were tried by students of Nature to see which was most suited for the purpose. We read of good remedies being advocated in 1711. A good syringe is described in 1763 for using a decoction of tobacco for the destruction of plant lice. I copy one of the remedies of that day for plant lice:—"First wet the affected trees infested with lice, and then rub flowers of sulphur upon the insects; it will cause all of them to burst." This remedy was perhaps slow, but was undoubtedly effective.

We spray because we have a constant fight against Nature; we prune for a similar reason, and we should prune as a preparation for spraying. We are out against natural laws, because we want the best; Nature wants the fittest. In a state of Nature, delicate or refined plants would be destroyed by their natural enemies; only the strong can withstand the attack, and the strongest tree seldom bears the best quality

fruit; we want quality and quantity, too; Nature's way is quantity. Having decided that we must protect our best trees we should ever bear in mind:—

That prevention is better than cure.

That the more care we take of our plants the better able they will be to withstand the attacks of pests.

Be ever watchful, and never allow the enemy to get a stronghold in our orchards.

And in all our works let us be thoughtful of useful birds and insects, and use every means of conserving their energies.

#### INSECT PESTS.

Nearly all the diseases or, say, ordinary diseases of plants are caused by small animals called insects, or by minute parasitic plants called fungi. Mr. Lea groups insects as follows:—

(1) Insects provided with jaws and exposed from first hatching out to becoming full fed, such as Looper caterpillars, cabbage moth, pear slug.

(2) Insects provided with jaws, and exposed during a short period of life, such as codlin moth, light brown apple moth.

(3) Insects which bore into wood, either above or below ground, such as cherry borers and longicorn larvæ.

(4) Insects which suck up their nourishment and become more or less permanently fastened to their food plants, such as scale insects and aphides.

(5) Insects which suck up their nourishment, but can either walk or fly, such as Rutherglen bug, soldier bug, and plant bugs generally.

(6) Maggots which live within fruits and vegetables or between the skins of leaves, such as Queensland and Mediterranean fruit fly, Cineraria fly.

(7) Insects which feed on the bark or young leaves and buds, such as weevils generally, culculio beetle.

(8) Mites, such as pear mite, red spider.

It is evident that where we have so many classes of insects to contend against no one remedy can be sufficient, and we must be guarded when listening to salesmen who claim to have any easy cure-all.

#### FUNGI.

Fungi constitute a subdivision of the Thallophytes. More than 40,000 species have been described, and all are characterised by a complete absence of chlorophyll. There is no need for me to classify these for our purpose, as we have to deal with but a few of them.

Bacterial diseases are practically beyond our powers at present, and I will not again refer to them, except to say that bacteria is a group of organisms included in the Thallophytes, and are sometimes termed Schizomycetes or splitting fungi. They appear to have little or no relationship to true fungi except that they are also devoid of chlorophyll. We have examples in bacteriosis of the walnut, the potato, and probably "root gall," which is prevalent in the river settlements and in other parts of the State which may be proved to be due to bacteria.

**AGRICULTURISTS**  
**CAN SECURE**  
**TECHNICAL ADVICE**  
**ON**  
**FARM BUILDINGS,**  
**SILOS,**  
**TANKS,**  
**SHEEP DIPS,**  
**REINFORCED CONCRETE GENERALLY,**  
**TOGETHER WITH**  
**PLANS AND SPECIFICATIONS,**  
**AND ASSISTANCE AND SUPERVISION**  
**IN CONSTRUCTION,**  
**ON APPLICATION TO THE**  
**DEPARTMENT OF AGRICULTURE,**  
**ADELAIDE.**

Fungus diseases grow either upon the surface of plants or within their tissues. Oidium of the grape vine is an example of the former, because it spreads in long growths over the surface of the leaves, penetrating but slightly. Other fungi, after germinating from their spores, penetrate into the bark, leaves, or fruit, and grow safe from observation, becoming visible only when mature enough to give off their reproductive cells, called spores. We have examples of these spores massed together in "black spot" of the apple and pear, "shot-hole" or "scab" of the apricot, "curl leaf" of the peach.

Having to some extent considered the history and also the causes of the diseases for which spraying is to be the remedy, we may now enter on the operation from a practical standpoint, but let us recapitulate. We have learned that prevention is better than cure, and to prevent the increase of both insect and fungus pests good orchard procedure is necessary, cleanliness and cultivation, no broken limbs or rough bark on the trees. We may then commence our spraying, using proved remedies, and we will be successful.

#### JUDGMENT IN APPLICATION.

One of the best American authorities on spraying, E. G. Lodeman, says "it should be remembered that in all cases success is dependent upon the exercise of proper judgment in making applications. Know the enemy to be destroyed, know the remedies that are most effective, and, finally, apply them at the proper season. Be prompt, thorough, and persistent. Knowledge and good judgment are more necessary to success than any definite rules." That is the best advice I can give you, and I will add that I have proved, and have seen others prove, the benefits to be derived from systematic spraying. Our guide must be proper remedies, application at the right time, and to see that all parts of the tree subject to attack are properly covered, especially terminals.

A good outfit is necessary to do good work; it is useless to say that only a "poor workman quarrels with his tools;" the opposite is the rule. The pump must of necessity vary with the size of the orchard. There are plenty of first-class small pumps, but where there are a number of small orchards it should be better to co-operate and get a first-class machine, power driven, of strong make, and able to work up to considerable pressure—200lbs. is not too much. Have a good tank and under carriage, something not easily overturned nor too heavy in draught. The nozzle is the crux of the question; it must be capable of sending a fine spray over a wide area; this, with force behind it, will do all that spraying can possibly do. However perfect the machine, and however carefully we handle the nozzle, limbs and twigs will tend to divert the spray from the parts of the tree we are trying to reach, hence the continual escape of some eggs, insects, or spores, and hence the continual warfare from time to time again.

When spraying against insects we must first consider whether we have to poison them or if we are to destroy them by contact. Insects with jaws are dealt with by applying a mixture of arsenate of



lead in fresh water, the strength varying according to the insect to be destroyed. We must, of course, be careful to have the application made in time to enable the insect to partake of the poison with its food. There are other poisonous compounds used for this purpose, but none are equal to arsenate of lead.

Insects which bore into wood are not amenable to spraying, but may be destroyed by inserting in the hole a piece of cotton wool, about the size of a pea, soaked in petrol or carbon bisulphide, which is used to stifle rabbits, then plug the hole with a bit of clay. Insects which suck their food must be destroyed by suffocation caused by fumigation or by a contact spray, such as kerosine emulsion and resin wash, with or without a tobacco extract. Maggots are not amenable to spraying. Mites are dealt with by contact sprays such as above and with lime sulphur compound.

For fungus diseases we spray to prevent, and all are stayed to a very considerable extent by a solution of copper sulphate or bluestone, with or without the addition of lime or washing soda, the season of application being the main factor.

#### ROOM FOR IMPROVEMENT.

I am willing to admit that while I have advised the use of arsenate of lead and of bluestone and tobacco extract as standard remedies, it is possible that something equal to them, or perhaps better, may be found. Indeed there are claims to that effect already, but I am one of the doubtful ones. If I could, I would compel a statement of the materials used in all of the patent insecticides and fungicides on the market to be branded on the container, and I would make a thorough test of them and publish the results; but so far we are unable to act in this way. All of the materials I have named can be obtained ready for use, but I am explaining the details of compounding them in case the cost of the made up article may rise too high; but I wish you to understand that districts vary, both in time of applying and in the strength needed. One thing you may be sure of, that is there is no danger to human or animal life or to fowls in using fruit which has been sprayed with poisons of the strength required. This has been clearly demonstrated here and in other parts of the world. Take, for instance, sprayed apples. It would be necessary for a person to eat at least two bushels, freshly sprayed, not being wiped or peeled, before the least effect would be observed. Sheep fed under a freshly sprayed tree suffered no ill, and fowls fed on chopped grass from a similar source enjoyed the meal and lived long after.

Do not spray on very hot days; spraying materials are often blamed for the damage done by our own thoughtlessness.

Up to the present time we have made very little use of "spreaders." I feel sure that we would be benefited by their use. Flour is the material used, 8lbs. are sufficient for 100galls. of spray; care is necessary to get it well mixed. It may be used in conjunction with bluestone sprays or with arsenate of lead sprays. Its use is to prevent the spray running into globules, thus keeping an even covering over all surfaces.

A good combined spray, which will control codlin moth and woolly aphis, may be made by using soft soap and tobacco extract as well as arsenate of lead. The quantities are:—Soft soap, 8lbs.; sulphate of nicotine (black leaf 40),  $\frac{1}{2}$ pt.; lead arsenate, 4lbs.; water, 80galls. The soft soap makes a good spreader. A similar mixture, but without the arsenate of lead, does excellent work in combating aphides, especially if used hot.

Arsenate of lead is best when used in powder form, and for codlin moth the amount used is from 1lb. to 30galls. to 50galls. of water. The time to use is just after the fall of the petals, before the calyx closes. Spray again within a fortnight, and about every four weeks, so as to keep a coat of spray on the fruit the whole growing period.

Lime sulphur compound may be made by using at the rate of 5.3lbs. of fresh lime, 10lbs. of flowers of sulphur to 5galls. of water. Weigh out the lime and sulphur and mix together in an iron boiler, which should be of at least 10galls. capacity; add half of the water, and keep clear of splashes; stir the mixture well with a flat stirrer. When thoroughly mixed add the balance of the water; stir well, and bring to a quick boil; keep it boiling briskly for at least one hour. After boiling, see that the bulk is the full 5galls. The mixture may be kept in air-tight drums, but is better used fresh. For winter work 1gall. of this mixture is added to 7galls. of water. For summer work, 1gall. is sufficient for 28galls. of spray. If to be used at blossoming time for red spider, 1gall. to 60galls. of water is strong enough.

The lime sulphur compounds sold ready made are excellent preparations, directions for use varying according to the brand. Lime sulphur compounds are very useful in combating oidium and strawberry mildew.

#### HOW TO MAKE AND WHEN TO USE BORDEAUX MIXTURE AND BURGUNDY MIXTURE.

These mixtures, which are composed of sulphate of copper (blue-stone) and lime or washing soda, are used for the purpose of preventing fungus diseases on fruit trees, such as "curl leaf" on the peach, "shothole" or "scab" on the apricot, and "blackspot" or "scab" on the apple and pear. They are undoubtedly the best preventives so far discovered; if properly made and used at the right time they are very effective, but their effectiveness varies with the climatic influences of the season.

To make Bordeaux mixture we need good bluestone and best quality fresh burned lime. If you cannot get these do not try to make up the mixture. Several recipes are in use, but I have found the best and simplest to be what is called the 4-4-40 mixture; that is 4lbs. of quicklime (lumps), 4lbs. of bluestone, and 40galls. of water.

The method is this:—Have two wooden tubs, each to hold at least 20galls., and one barrel to hold at least 40galls. Put 20galls. of water (good fresh water) in one tub, have 4lbs. of bluestone weighed out and tied up in a piece of hessian or sugar bag, and suspend it near the surface of the water, when it will quickly dissolve, which it would not

do if thrown into the water. Into the other tub put the lime, dry, then throw in a little water, and keep on adding a little more until the lime is thoroughly slaked. When this has been done add more water until 20galls. are in the tub, keeping it well stirred the whole time; this results in what is called "milk of lime." The next part of the process is to run the lime solution and the bluestone solution into the barrel, through a piece of hessian to catch up any grit, care being taken that equal parts of each solution run together into the barrel, keeping the lime tub stirred all the time. The mixing may be done by the use of syphons or taps or by taking a bucket of solution from each tub and then running it together into the barrel. Kerosine buckets coated with liquid lacquer will last a long time.

If more than this quantity be required the operation may be repeated or the amount used increased, but remember that it is better to have freshly made mixture. If large quantities are required strong stock solutions may be made, and small lots of these diluted and then mixed, just the same as described above.

The Bordeaux mixture made up in this manner has a very light flocculent precipitate, which readily stays in suspension, and thus needs but little agitation. It is this precipitate which does the work. If strong solutions are mixed the precipitate is heavy and coarse, and is difficult to apply. The mixture should be used soon after making as possible.

The time to apply it to get the best results is just as the blossoms are about to open, or "when the pink shows," but it will not do any damage if continued when the blossom is open. If trees have been badly affected it is well to spray in the autumn, when the leaves begin to fall. Do not spray on a hot, sunny day or on a rainy day; a cloudy day is best or early in the morning. If the spray has dried on to the foliage rain will not lessen the results, but if rain comes while the spray is still damp spraying will have to be repeated. See that every part of the tree is covered, terminals especially.

Burgundy mixture is compounded in a similar manner, but in place of the lime washing soda crystals are used, and they must be pure crystal. Do not use any white powder which may be in the cask; it is of different composition. The quantities to use are bluestone, 4lbs.; soda crystals, 7lbs.; and water 40galls. The soda dissolves more readily if suspended at the surface of the water or in hot water. Bluestone dissolves quicker in hot water. The chemistry of the process is still somewhat in doubt. It seems quite simple to work out what should happen when milk of lime and copper sulphate are mixed, and that the union causes the formation of copper hydrate and sulphate of lime,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O} + \text{CaOH}_2 = \text{Cu}(\text{OH})_2 + \text{CaSO}_4 + 5\text{H}_2\text{O}$ , and there is every likelihood that this is the general reaction, but there also appears to be other reactions which have not been so far satisfactorily explained.

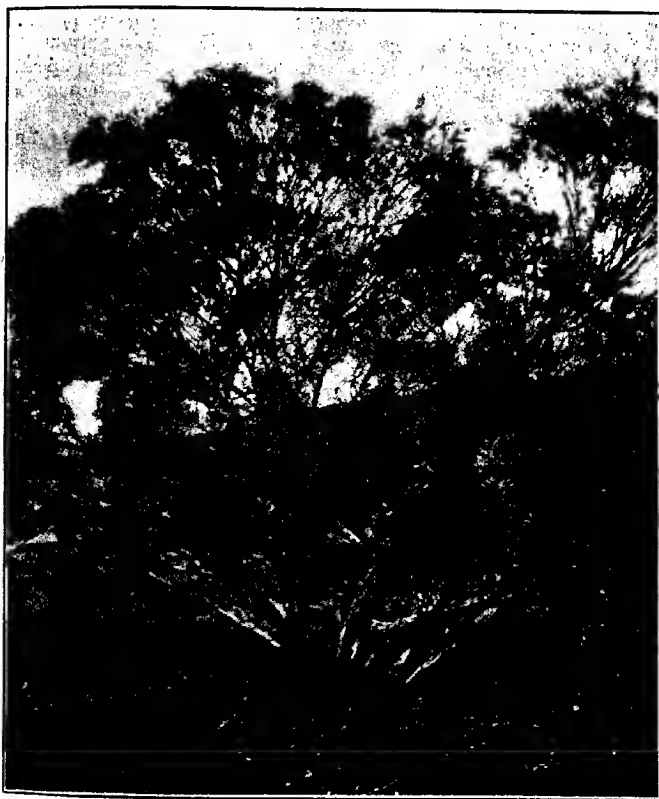
If other types of sprays are required I would recommend that Bulletin No. 70 be obtained, where their composition is explained. The same pamphlet also explains the method of fumigation by hydrocyanic acid gas.

## "SILVER WATTLE" GUM.

OBTAINED FROM *ACACIA RIVALIS*.

[By H. W. ANDREW, Botanical Assistant, &c.]

For upwards of 30 years a comparatively little known industry, the gathering of the so-called "silver wattle" gum, has been established in the Flinders Range over a narrow strip of country extending roughly between Moolooloo, Blinman, and Hawker.



Silver Wattle (*Acacia rivalis*).

Although this acacia has thus been known commercially for a good number of years no previous record in Australian literature is to be found as to the distribution or botanical name of the tree from which the gum is derived. This is accounted for by the rather remarkable fact that the tree has only been known botanically since 1918. The following details, therefore, are deemed worthy of placing on record.

## DISTRIBUTION.

When in the Blinman district last August I made inquiries concerning the tree from which this gum is collected. About two miles east of the Blinman township trees were seen growing, from which the "silver wattle" gum was collected by local people each year. A few days later, at Moolooloo Station, about nine miles from Blinman, I again came across the tree, where it appeared to be fairly plentiful. Here also it received the same name, "silver wattle," and the manager of the Moolooloo Station confirmed the statement made to me by others, viz., that this was the tree from which the local "silver wattle" gum is secured. On examination the tree proved to be *Acacia rivalis*, J. M. Black. This species was first described and recorded by Mr. Black, who was not aware of its economic value, in the "Transactions of the Royal Society of South Australia, vol. xlii., year 1918, from specimens found growing in the hed of a creek near Hawker in October, 1917. A note in that journal states that a specimen was submitted to Mr. J. H. Maiden, the leading authority on Australian acacias, who agreed that it was probably a new species, and further that "its affinity

Seed Pods and Seed of *Acacia rivalis*.

appears to be with *A. leprosa*, Sieb., var. *tenuifolia*, Benth., in the flowers and bracts, and with the narrow forms of *A. stricta*, Willd., in the phyllodes and general appearance, but the flowers and pods are totally different. The pods are a good deal like those of *A. calamifolia* and its allies. Without flowers and pods it could easily be mistaken for *A. aestivalis*, Pritzl, a Western Australian species."

*The Gum.*—From a number of inquiries made concerning this gum it was ascertained the minimum quantity produced and sold this year was 6 tons, the wholesale price paid for which was approximately 70s. per cwt. One firm put down the production this year at 10-14 tons.


Supplies chiefly come from the Blinman district, and appear to be bought up largely from the pickers by local storekeepers, and ultimately sent to Adelaide. Production varies very much according to the climatic conditions of the gumming season, which usually begins about January; 4-14 tons are said to be produced annually.

Commercial lots of this year's gum actually examined in Adelaide very much resemble in appearance gum arabic obtained from *Acacia senegal*, varying from light yellow to a cherry red, and beautifully frosted on the surface, the pellets of gum ranging in size from that of a small marble to a medium-sized apple. Another local trade name for the gum is "first light grade gum."

So far I have been unable to ascertain definitely the use to which this gum is put, or the ultimate destination of main supplies. Doubtless it is used frequently as a substitute for gum arabic, though it was said to be unsuitable in the manufacturing of jujubes. Before the war most of it seems to have gone to Germany, and subsequently much of it disposed of in Australia.

Although I did not traverse the whole of the district where this wattle is growing, still I could not help being struck with the marked absence of young trees over the country covered; rabbits and stock, no doubt, both play a role in reducing the area of this very useful native tree.

The fact that this plant, though known commercially for so many years, was not described botanically at an earlier date is a striking commentary on work done with our useful native plants. The definite mapping out of the region covered by this tree, which appears to be peculiar to this part of Australia, one would think might be undertaken with advantage.

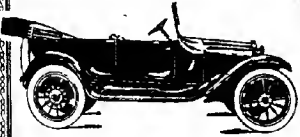


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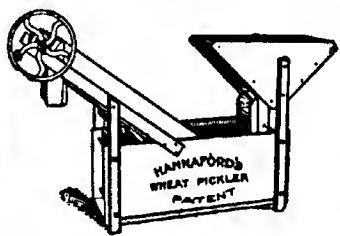
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## EXPERIMENTAL FARM HARVEST REPORTS.

### KYBYBOLITE EXPERIMENTAL FARM.

(Continued from page 141.)

[By W. J. SPAFFORD, Superintendent Experimental Work, and  
L. S. DAVIE, Manager.]

#### EXPERIMENTAL PLOTS.

The principal lines of experimental cropping at Kybybolite have been converted from manurial and cultivation tests with the cereals to rotation of crops experiments. This change was rendered necessary owing to the poor success achieved with the cereals, and with soils of such low quality in a district with a good crop-growing climate, crops to be carted off the land must play second part to livestock. When the main part of the farm is being worked as rotation of crops plots, cereals will still be grown, but only in rotation with crops to be grazed by livestock. As the change was only made in 1918, the results secured to date are no more than yields of crops, and it will be quite impossible to interpret correctly the results for some few years.

#### Five-course Rotation of Crops.

Five fields of equal area, each about 30 acres, are being cropped as follows:—

1. Field 20A—Peas, with 1 ton lime and 1cwt. superphosphate per acre.
2. Field 20B—Oats, with 1cwt. superphosphate per acre.
3. Field 20C—Kale, second year.
4. Field 20D—Kale, with 1cwt. bonedust per acre.
5. Field 20E—Wheat, with 1cwt. superphosphate per acre.

These crops are so arranged that they will follow one another in a regular order, as is shown below:—

Year.	Field 20A	Field 20B	Field 20C	Field 20D	Field 20E
1918 . . . . .	Oats	Kale	Kale	Wheat	Peas
1919 . . . . .	Peas	Oats	Kale	Kale	Wheat
1920 . . . . .	Wheat	Peas	Oats	Kale	Kale
1921 . . . . .	Kale	Wheat	Peas	Oats	Kale
1922 . . . . .	Kale	Kale	Wheat	Peas	Oats
1923 . . . . .	Oats	Kale	Kale	Wheat	Peas

The harvested crops—peas, oats, and wheat—behaved as follows this year:—

*Peas* (Field 20A)—This plot carried oats last year, and was “ridge” ploughed between July 17th and August 7th. A dressing of 1 ton of

lime per acre was then broadcasted, and 100lbs. Early Dun field peas and lewt. superphosphate drilled in to the acre between August 12th and 21st, and the whole plot harrowed. The 28.67 acres harvested yielded only 60bush. 32lbs. for an average of 2bush. 7lbs. per acre.

*Oats* (Field 20B)—The butts of the kale plants grown here were a bit troublesome when the land was "ridge" ploughed between April 25th and May 6th, but they were barrowed off between May 6th and 8th. Immediately behind the harrows 60lbs. Algerian oats and lewt. superphosphate were drilled in to the acre, and the land was again harrowed. Of the crop, 8.92 acres were cut for hay, and produced 17 tons 0cwt. 84lbs. for an average of 1 ton 18cwt. 22lbs. per acre; the remainder—16.43 acres—was harvested for grain, and yielded 604bush. 19lbs. for an average of 36bush. 32lbs. per acre.

*Wheat* (Field 20E)—The stubble of the pea crop was "ridge" ploughed between May 21st and 30th, and 80lbs. Queen Fan wheat and lewt. superphosphate drilled in to the acre between May 28th and 30th, and the whole block was harrowed behind the drill. Of the crop, 9.04 acres were cut for hay, and 22 tons 5cwt. 56lbs. were received, equalling 2 tons 9cwt. 31lbs. per acre; the remainder—19.6 acres—yielded 608bush. 50lbs. for an average of 31bush. 4lbs. per acre.

The next table shows the yields received from these plots for the past two seasons:—

*Five-course Rotation of Crops, Kybybolite, 1918-1919.*

Year.		Oats.		Peas.	Grain.	Wheat.	
		Hay.	Grain.			Hay.	Grain.
		T. C. L.	B. L.		B. L.	T. C. L.	B. L.
1918 . . .	(20A)	0 14 82	15 25	(20E)	0 46	(20D)	1 8 15
1919 . . .	(20B)	1 18 22	36 32	(20A)	2 7	(20E)	2 9 31
Means . .		1 6 52	26 8		1 26	1 18 79	24 4

*Six-course Rotation of Crops.*

For this experiment six plots, each about two acres in area, have been set aside, and have now carried the second crop of the following rotation of crops:—

1. Field 9A—Oats and vetches (hay), with lewt. superphosphate per acre.
2. Field 9B—Turnips, with lewt. superphosphate per acre.
3. Field 9C—Oats, with 2cwt. superphosphate per acre.
4. Field 9D—Red clover (5lbs.) and Italian rye grass (10lbs.).
5. Field 9E—Clover and rye grass.
6. Field 9F—Wheat, with 1 ton lime and lewt. superphosphate per acre.



These plots are to be cropped in the regular order set out below:—

Year.	Field 9a.	Field 9b.	Field 9c.	Field 9d.	Field 9e.	Field 9f.
1918	Wheat	Oats and vetches	Turnips	Oats	Rye grass	Rye grass
1919	Oats and vetches	Turnips	Oats	Rye grass	Rye grass	Wheat
1920	Turnips	Oats	Rye grass	Rye grass	Wheat	Oats and vetches
1921	Oats	Rye grass	Rye grass	Wheat	Oats and vetches	Turnips
1922	Rye grass	Rye grass	Wheat	Oats and vetches	Turnips	Oats
1923	Rye grass	Wheat	Oats and vetches	Turnips	Oats	Rye grass
1924	Wheat	Oats and vetches	Turnips	Oats	Rye grass	Rye grass

The harvested crops—oats and vetches (hay, oats, and wheat—behaved as follows this year:—

*Oats and Vetches* (Field 9A)—The plot, which carried wheat in 1918, was ploughed on May 7th, skim ploughed on May 28th, and on May 30th 60lbs. Algerian oats, 20lbs. vetches, and 1cwt. superphosphate were drilled in to the acre, and the whole was harrowed on May 31st. The 1.94 acres cut yielded 1 ton 0cwt. 42lbs. of hay for an average yield of 10cwt. 56lbs. per acre.

*Oats* (Field 9C)—After a crop of turnips the land was ploughed on May 8th, cultivated on May 28th, and on June 7th 60lbs. Algerian oats and 1cwt. superphosphate were drilled in to the acre, and the whole block immediately harrowed. The 1.94 acres harvested produced 26bush. 2lbs. for an average of 13bush. 17lbs. per acre.

*Wheat* (Field 9F)—The plot was ploughed on May 27th, 1 ton lime broadcasted per acre on May 27th and 28th, cultivated on May 30th; 80lbs. Federation wheat and 1cwt. superphosphate were drilled in to the acre on May 30th, and the plot was then harrowed. The 1.12 acres harvested yielded 12bush. 40lbs. for an average of 11bush. 19lbs. per acre.

The yields secured from these crops in the six-course rotation of crops for the past two seasons are set out below:—

*Six-course Rotation of Crops, Kybybolite, 1918-1919.*

Year.	Oats. Grain.		Oats and Vetches. Hay.			Wheat. Grain.	
	B.	L.	T.	C.	L.	B.	L.
1918 . . . . (9D)	9	4	(9B)	0	14	12	(9A) 8 11
1919 . . . . (9C)	13	17	(9A)	0	10	56	(9F) 11 19
Means . . . .	11	10		0	12	34	9 45

*Four-course Rotation of Crops.*

This series, built up on the Norfolk four-course rotation, *i.e.*, two cereals, one of which is always wheat, a root crop, and a leguminous crop, is being conducted on plots each about  $4\frac{1}{2}$  acres in area, and the cropping consists of:—

1. Field 4—Peas, with 1ton of lime and 1cwt. superphosphate per acre.
2. Field 4A—Wheat, with 1cwt. superphosphate per acre.
3. Field 4B—Turnips, with 2cwts. superphosphate per acre.
4. Field 4C—Oats, with 1cwt. superphosphate per acre.

For the next few years these plots will be cropped as follows:—

Year.	Field 4.	Field 4A.	Field 4B.	Field 4C.
1919 .....	Peas	Wheat	Turnips	Oats
1920 .....	Wheat	Turnips	Oats	Peas
1921 .....	Turnips	Oats	Peas	Wheat
1922 .....	Oats	Peas	Wheat	Turnips
1923 .....	Peas	Wheat	Turnips	Oats

These plots carried their first crops this year with the following results:—

*Peas* (Field 4)—This plot, which carried crops of linseed, *Phalaris minor*, and wheat in 1918, was ploughed on June 25th, and 2 tons lime per acre was broadcasted between July 10th and 12th, the harrows working it into the land on July 31st. On August 1st 100lbs. Early Dun peas and 1cwt. superphosphate were drilled in to the acre, and the whole immediately harrowed. The 4.01 acres harvested gave 10bush. 7lbs., equal to 2bush. 31lbs. per acre.

*Wheat* (Field 4A)—This plot was grazed during 1918, was ploughed on February 22nd and 23rd, skim ploughed April 2nd, and again on May 20th, and on May 31st 80lbs. of White Tuscan wheat and 1cwt. superphosphate were drilled in to the acre, the harrows being run over the land on June 2nd. The 5.05 acres harvested yielded 148bush. 37lbs. for an average of 29bush. 26lbs. per acre.

*Oats* (Field 4C)—This plot, which carried crops of linseed, *Phalaris minor*, and wheat was ploughed on June 5th, seeded on June 7th with 70lbs. Algerian oats and 1cwt. superphosphate per acre, and immediately harrowed. The 4.04 acres harvested produced 69bush. 3lbs. of oats averaging 17bush. 4lbs. per acre.

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## EXPERIMENTS WITH RAW ROCK PHOSPHATE.

Experiments to test the agricultural value of raw rock phosphates were commenced at Kybybolite in 1919, the rocks being tried containing (a) calcium phosphate and (b) aluminium phosphate, equivalent to about 18 per cent. of phosphoric acid, so being low-grade phosphates.

*Raw Rock Phosphates on Crops to be Harvested.*

For the testing of the rock phosphates on crops to be harvested, a rotation consisting of wheat (for hay), peas, was laid down, in which both the wheat and pea crops are dressed with the same fertilisers, as is shown below:—

*Wheat—Peas Rotation.*

Plot.	1919.	1920.	1921.
1	Wheat—No manure	Peas—No manure	Wheat—No manure
2	Peas—No manure	Wheat—No manure	Peas—No manure
3	Wheat—5cwts. lime	Peas—5cwts. lime	Wheat—5cwts. lime
4	1cwt. super	1cwt. super	1cwt. super
5	Peas—5cwts. lime	Wheat—5cwts. lime	Peas—5cwts. lime
6	1cwt. super	1cwt. super	1cwt. super
7	Wheat—1cwt. super	Peas—1cwt. super	Wheat—1cwt. super
8	Peas—1cwt. super	Wheat—1cwt. super	Peas—1cwt. super
9	Wheat—11cwts. aluminium phosphate	Peas—1cwt. aluminium phosphate	Wheat—1cwt. aluminium phosphate
10	Peas—11cwts. aluminium phosphate	Wheat—1cwt. aluminium phosphate	Peas—1cwt. aluminium phosphate
11	Wheat—11cwts. calcium phosphate	Peas—1cwt. calcium phosphate	Wheat—1cwt. calcium phosphate
12	Peas—11cwts. calcium phosphate	Wheat—1cwt. calcium phosphate	Peas—1cwt. calcium phosphate

The results secured from these plots this year are:—

*Raw Rock Phosphate Tests on Wheaten Hay, Kybybolite, 1919.*

Plot.	Manuring per Acre.	Area. Acres.	Yield per Acre.		
			T.	C.	L.
1.	No manure . . . . .	2	0	10	84
2.	5cwts. lime, 1cwt. superphosphate . . . . .	2	1	6	105
3.	1cwt. superphosphate . . . . .	2	1	7	28
4.	11cwts. aluminium phosphate rock . . . . .	2	1	6	91
5.	11cwts. calcium phosphate rock . . . . .	2	1	3	7

*Raw Rock Phosphate Tests on Peas, Kybybolite, 1919.*

Plot.	Manuring per Acre.	Area. Acres.	Yield per Acre.		
			B.	L.	
1.	No manure . . . . .	2	0	30	
2.	5cwts. lime, 1cwt. superphosphate . . . . .	2	1	17	
3.	1cwt. superphosphate . . . . .	2	1	4	
4.	11cwts. aluminium phosphate rock . . . . .	2	1	30	
5.	11cwts. calcium phosphate rock . . . . .	2	0	39	

In the above plots White Tuscan wheat at the rate of 80lbs. per acre was sown on May 30th, and Early Dun field peas at the rate of 100lbs. per acre on August 7th.

The pea crops on all of the plots were almost total failures, despite the fact that in the early stages of growth they all promised to be good, but their late seeding did not give them a chance to be forward enough when the hot, dry weather set in.

#### *Raw Rock Phosphate on Natural Pasture.*

The same two rock phosphates as are being used on the wheaten hay-pea rotation are being tested on natural pasture on plots about four acres in extent, under the following treatments:—

Plot A—2 tons calcium phosphate per acre.

Plot B—2 tons aluminium phosphate per acre.

Plot C—11cwts. calcium phosphate per acre, then an annual application of 1cwt. calcium phosphate.

Plot D—11cwts. aluminium phosphate per acre, then an annual application of 1cwt. aluminium phosphate.

Plot E—Annual application of 1cwt. superphosphate per acre.

Plot F—Annual application of 1cwt. superphosphate and 5cwts. lime per acre.

Plot G—No fertiliser.

Grazing results from these treated pastures will be available this year, and cannot be anything but interesting and instructive.

#### *Temporary Field Experiments.*

Besides the permanent experimental plots, some temporary experiments in the growing of crops were conducted, viz.:—(1) The lasting effects of dressings of lime; (2) the effects of applications of peat to wheat crops; (3) the effects of the addition of *Phalaris minor* seed to hay crops.

#### THE LASTING EFFECTS OF APPLICATIONS OF LIME.

In 1915 part of Field No. 5 was limed at the rate of 1 ton per acre, the remainder of the field being left untreated, and these plots since that time have received identical treatment, with the following results:—

1915.—Plot 1 was limed in the autumn at the rate of 1 ton per acre, and later on wheat was drilled in with 1cwt. superphosphate per acre on both plots. The whole crop was badly affected with red rust, and the limed portion, having made ranker and stronger growth, suffered most, and when harvested the plots returned:—

Plot 1 .. .. . 11bush. 53lbs. per acre

Plot 2 .. .. . 10bush. 29lbs. per acre

1916.—Both plots were sown with oats for hay with 1cwt. superphosphate per acre.

Plot 1 yielded .. .. . 1 ton 17cwts. 85lbs. per acre

Plot 2 yielded .. .. . 1 ton 4cwts. 3lbs. per acre

1917.—The plots were left out as pasture this year, and as they are not fenced separately grazing results were not kept. The limed portion produced much more feed than Plot 2, and, although "sorrel" was very plentiful on this latter plot, it was almost entirely absent on Plot 1 (limed).

1918.—Wheat was again grown on the plots this year with 1cwt. superphosphate per acre, and yielded:—

Plot 1 . . . . .	26bush, 53lbs. per acre
Plot 2 . . . . .	20bush, 47lbs. per acre

1919.—A six-rowed barley (short head) was grown with 1cwt. superphosphate per acre, with the following results:—

Plot 1 . . . . .	20bush, 15lbs. per acre
Plot 2 . . . . .	14bush, 8lbs. per acre

For the five years this 1 ton application of lime has given the increases shown below:—

1915 . . . . .	1bush, 24lbs. of wheat per acre.
1916 . . . . .	13cwts. 82lbs. of oaten hay per acre.
1917 . . . . .	Much more pasture per acre.
1918 . . . . .	6bush, 6lbs. of wheat per acre.
1919 . . . . .	6bush, 7lbs. of barley per acre.

#### TESTING LIGHT APPLICATIONS OF PEAT.

In Field No. 17 plots were laid down in which White Tuscan wheat was sown at the rate of 80lbs. of seed with 1cwt. superphosphate per acre, then some of the plots were top-dressed with dry peat from Rendelsham. The yields secured, like those from similar plots in previous years, show but little advantage from the use of light dressings of peat, and in the Kybybolite conditions is not worth further trials at present.

#### *Testing Applications of Peat to Wheat, Kybybolite, 1919.*

Peat Applied per Acre.	Area. Acres.	Total Yield.		Yield per Acre.	
		B.	L.	B.	L.
Superphosphate only . . . . .	0.67	6	42	10	0
496lbs. peat . . . . .	0.67	7	6	10	36
992lbs. peat . . . . .	0.67	6	52	10	16
1,492lbs. peat . . . . .	0.67	7	28	11	9

#### TESTING PHALARIS MINOR IN A HAY CROP.

A plot of *Phalaris minor* in 1918 made such good, strong growth that it was decided to try it mixed with oats for hay. In Field 15, a block a little over 10 acres in area was drilled in with Algerian oats at the rate of 60lbs. seed with 1cwt. superphosphate per acre, and then 30lbs. of *Phalaris minor* seed was broadcasted to the acre over half the plot, with the following result:—

#### *Phalaris minor in Oaten Hay, Kybybolite, 1919.*

Crop.	Area. Acres.	Total Yield.			Yield per Acre.		
		T.	C.	L.	T.	C.	L.
Oats . . . . .	5.04	2	9	42	0	9	89
Oats and <i>Phalaris minor</i> . . . . .	5.27	7	6	84	1	7	95

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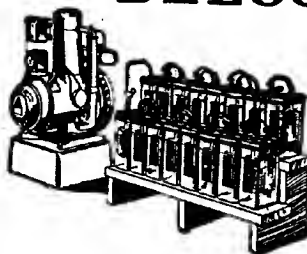
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## THE AGRICULTURAL BUREAU.

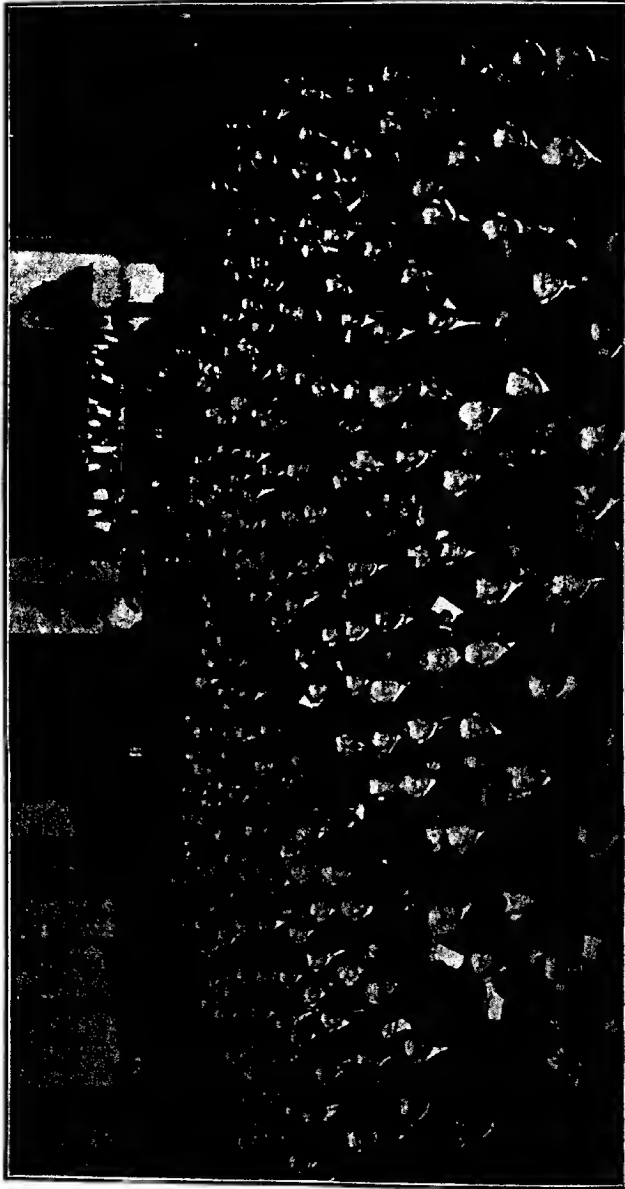
### THE THIRTY-FIRST ANNUAL CONGRESS.

OPENED BY HIS EXCELLENCY THE GOVERNOR.

The thirty-first Annual Congress of the Agricultural Bureau of South Australia was held in the Victoria Hall, Gawler Place, Adelaide, on Monday, Tuesday, and Wednesday, September 13th, 14th, and 15th. The attendance on the opening night was a record one, and during the whole of the sessions of the following days a keen interest was maintained by the delegates.

During the sessions the following delegates attended:—Alawoona—C. Tiller, B. Flint; Aldinga—C. Lovelock, R. Pengilly; Amyton—A. Crisp, S. Thomas; Angaston—M. Hurn, B. Ninnies; Appila-Yarrowie—W. Francis, G. Wurst; Artherton—W. Short, T. Howlett; Ashbourne—H. Meyer, V. Stevens; Balaklava—R. Butler, H. Goldney; Beetaloo Valley—J. McIntosh, J. Bird; Belalie North—H. Cummings, A. Warner; Berri—W. Lewis, A. Jarvis; Big Swamp—T. Smith, F. Gore; Blackheath—R. Talbot, G. Paech; Blackwood—T. Magarey, J. Turner; Blyth—J. Harmer, E. Deland; Booleroo Centre—R. Stanton, W. Whibley; Borrika—V. Brown, E. Cowled; Brentwood—C. and J. Boundy; Brinkley—E. Pearson, H. Humphrey; Bundaleer Springs—S. Ellis, F. Giles; Bute—W. Sharman, L. Simon; Butler—D. Stewart, C. Jericho; Canowie Belt—R. Carter, H. Wedding; Carrow—P. Byrne, G. Reed; Cherry Gardens—C. Ricks, H. Strange, A. Broadbent; Clare—M. Nolan, L. Butler; Clarendon—P. Hawkes, T. Brooks; Claypan Bore—A. Biefford, E. Colwill; Cleve—H. Hamilton, S. Quinnell; Collie—C. Rowen, F. Little; Coomadook—W. Ninnies, M. Wilkin; Coonalpyn—J. Cronin, F. Tregenza; Coonawarra—E. Alder, H. Reschke; Crystal Brook—J. Pridham, R. Townsend; Cummins—B. Black, E. Slater; Cygnet River—F. Wakelin, J. Osterstock; Dowlingville—F. Cromer; Edillilie—A. Palm, T. Knight; Elbow Hill—T. Cowley, W. Cooper; Eurelia—C. Kaerger, M. Roach; Francis—L. Krahnert, J. Baldock; Gawler River—J. Dawkins, W. Rice; Georgetown—A. Thompson; Geranium—O. Lang, F. Lillycrapp; Gladstone—R. Coe, L. Sargent; Glencoe—J. Riddoch, M. Cameron; Goode—P. Hunt, W. Morecombe; Green Patch—E. Chapman, T. Proude; Gumeracha—B. Cornish, J. Randell; Halidon—J. Westover, J. Braithwaite; Hartley—O. Sowerby, D. Westwood; Hawker—B. Mansom, J. Smith; Hookina—G. Hentschke, B. Murphy; Inman Valley—D. Nosworthy, W. Roads; Kadina—P. Anderson, J. Cowley; Kalangadoo—H. Mills, G. Bennett; Ki Ki—T. Cooley, L. Crouch; Kilkerran—T. Geater, J. Cogan; Kimba—W. Scott, H. Sampson; Kingston-on-Murray—E. Chaston, M. Forgie; Kongorong—W. Aslin, C. MacLean; Koppio—T. and G. Gardner;





The Thirty-first Annual Congress of the Agricultural Bureau of South Australia, Opened by His Excellency the Governor (Sir W. E. G. A. Weikell, K.C.M.G.), in the Victoria Hall, Adelaide, on September 13th, 1920.

Kybybolite—A. Hahn, J. Hammatt; Lake Wangary—A. Hawke, A. McEvoy; Lameroo—R. Scharnberg, J. Kakoschke; Laura—E. Pech, H. Lines; Leighton—W. Lloyd; Lone Pine—A. Lehmann, E. Hentschke; Lone Gum—T. Barry, S. McLaren; Lucindale—S. Rayson, P. Dow; Lyndoch—J. Hammatt, N. Zimmermann; MacGillivray—H. Wiadrowski, R. Wheaton—Maitland—G. Pearce, H. Tossell; Mallala—H. Rowe, J. Catt; Meadows—F. Nottage, H. Michelmore; Meribah—E. Mundy, F. Tee; Milang—H. Pavy, J. Yelland; Millicent—D. Hannaford, H. Holzgreffe; Miltalie—P. McEachen, O. Degner; Mindarie—T. Stott, T. Vowles; Minnipa—W. Chartier, J. Head; Mintaro—H. Schunke, R. Kelly; Monarto South—G. Hartmann, C. Harper; Moonta—T. Cliff, J. Lawry; Moorak—M. Fahy, I. Boardman; Moorlands—L. Spurr, W. Marshmann; Moorook—F. Vardon, W. Battams; Morehard—R. Kitto, B. McCallum; Morgan—R. Wohling, W. Fellke; Morphett Vale—A. C. Pocock, A. F. Furniss; Mount Barker—F. Simper, H. Jones; Mount Bryan East—J. Thomas; Mount Gambier—H. McCormick, G. Gurry; Mount Hope—T. Speed, R. Myers; Mount Remarkable—H. McKenzie, T. Bishop; Mundalla—J. Staude, E. Knowling; Murray Bridge—E. Nelson, J. W. Baldock; Mypolonga—L. Cailles, L. Foster; Myponga—M. McGuinness, J. Muller; Nantawarra—R. Uppill, R. Nicholls; Naracoorte—W. Loller, F. Holmes; Narridy—T. Pascoe, J. Darley; Narrung—Thatcher, — McNicol; Netherton—A. Lower, W. White; North Booborowie—J. Thomas, S. Mudge; Nunkeri and Yurgo—J. Ling, H. Sanders; O'Loughlin—C. Bergmann, A. Board; Orroroo—A. Brice, J. Dennis; Parilla—J. Darby, G. Gregory; Parrakie—A. Beelitz, F. Gravestocks; Paruna—A. Cameron; Paskeville—C. Lee, J. Pontifex; Penola—F. Kidman, E. Hinze; Petina—G. Newbon, W. Stone; Pine Forest—I. Edwards, F. Schultz; Pinnaroo—F. Bonnin, E. Parsons; Pompoote—R. Whittaker, E. Clancy; Port Broughton—W. Whittaker, R. Goodridge; Port Elliot—W. Hargreaves, H. Welch; Port Germein—S. Broadbear, A. Trestrail; Port Pirie—F. Jose, A. Lawrie; Ramco—H. Hunter, J. Odgers; Redhill—J. McAverney, G. Button; Renmark—H. Taylor, W. Woodham; Riverton—T. Longbottom, E. Gray; Riverton Women's—Mrs. R. Wakeham, Mrs. T. Longbottom; Roberts and Verran—A. Cowley, H. Videon; Rosedale—F. Nielsen, E. Lienert; Rosy Pine—C. Schiller, G. McCabe; Saddleworth—J. Coombe, R. Hannaford; Saddleworth Women's—Mrs. Coleman, Mrs. Melville; Salisbury—W. Sheperdson, A. Urlwin; Salt Creek—L. Guidera, C. Venning; Sandalwood—J. Hood, A. Besley; Shoal Bay—G. Barrett, H. Noske; Smoky Bay—F. Gregor, G. Crocker; Stockport—G. Weste, R. Whitelaw; Strathalbyn—S. Bottrill, F. Allison; Tantanoola—E. Altschwager, D. Beaton; Taplan—A. Schulze, W. Hannaford; Tarcowie—A. Dempster, O. Davidson; Two Wells—S. Wasley, H. Kenner; Veitch—T. Gibson, T. Long; Waikerie—H. Lehmann, R. Kilsley; Wanbi—W. and L. Arney; Warcowie—G. Growden, J. Jones; Warrow—S. Puckridge, J. Cowan; Watervale—G. Holder, P. Dunstan; Wepowie—E. Pearce; Whyte-Yarcowie—E. Pearce, J. Walsh; Wilkawatt—D. Bowman, F. Koch; Willowie—A. Hughes, W. Martin;

Wilmington—J. Hannagan; Wirrabara—E. Stevens, E. Pitman; Wollowa—V. Stone, A. Broad; Wudinna—F. Johnson, G. Plew; Wynarka—J. Boyce, L. Chamberlain; Yacka—J. Rundle, A. McCallum; Yandnarie—A. Jericho, O. Forbes; Yaninee—H. Hawthorne, H. Scholz; Yeelanna—F. Proctor, R. Wemyss; Yongala Vale—B. Lloyd, A. Jamieson.

#### THE OPENING SESSION.

The Congress was opened on Monday evening, September 13th, at 8 p.m., by His Excellency the Governor (Sir W. E. G. A. Weigall, K.C.M.G.). Mr. C. J. Tuckwell (Chairman of the Advisory Board of Agriculture) presided, and among others present were Hon G. Laffer (Commissioner of Crown Lands and Repatriation), Mr. H. H. Corbin (Consulting Forester and Lecturer in Forestry, University of Adelaide), Mr. S. McIntosh (Director of Irrigation), Mr. Legh Winsor (Private Secretary to His Excellency the Governor), Professor Arthur J. Perkins (Director of Agriculture), Mr. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S. (Principal Roseworthy Agricultural College), Mr. D. F. Laurie (Government Poultry Expert), Mr. P. H. Suter (Government Dairy Expert), and Messrs. F. Coleman, W. S. Kelly, Capt. S. A. White, Col. Rowell, T. H. Williams (members of the Advisory Board of Agriculture), Mr. W. L. Summers (Secretary to the Minister of Agriculture), and Mr. H. J. Finnis (Acting Secretary of the Advisory Board of Agriculture). The Chairman (Mr. C. J. Tuckwell) apologised for the unavoidable absence of the Minister of Agriculture (Hon. T. Pascoe), and asked His Excellency to open the Congress.

#### THE GOVERNOR'S ADDRESS.

His Excellency, on rising to deliver the opening address, was accorded a rousing reception. He said no other gathering at which he had been present in South Australia had given him greater pleasure to attend than that one. All his life he had been in an agricultural atmosphere. It was his privilege in the old country, in his private, public, and political life, to be entirely among agriculturists. He felt an enormous difficulty in speaking that night, not for want of material—there was no end of subjects to which he would like to address himself, perfectly freely and frankly—but in the position he held he was afraid that was absolutely impossible. From the purely agricultural point of view he felt diffidence, because all the farming in the old country—the whole system of land tenure there with the owner, and the fixed capital, the occupier, with the moving capital, and the laborer with the muscle and the sinew—was different, except the last named, from that of South Australia. It had been his privilege for 10 years to represent nothing but agriculturists in the House of Commons, but he could not address them on any controversial political subjects, although he knew that there were several agitating the minds of the farmers. What he proposed to do was to devote himself exclusively to general matters. In the first place they could congratulate themselves upon the kindness of Providence during the last few weeks. (Applause.) All the good coming from the heavens came to them as

agriculturists, and if they would allow him, he wanted to speak to them, not as Governor of South Australia, but as one farmer of one country talking to another farmer of what he might call a collateral relation of that country. (Applause.)

#### FOUNDATION OF PROSPERITY.

This representative meeting of agriculturists was as important a gathering in the State as it was possible to get together. After all, agriculture here was the foundation of all prosperity. Whatever other avenues for progress and prosperity were open they must all be superstructures on agricultural activities which really represented the foundation of everything that made for good in the industrial and commercial life. He had had the privilege of reading copies of *The Journal of Agriculture*, and could conceive of nothing but good coming from the opportunities offered in the various districts for the producers to exchange views one with the other. He had also read with intense interest the reports of the Bureau Conferences. Much that he had read—he was going to be perfectly frank—had appeared to him to be extremely sound and sane, but there had been much which did not commend itself to him. (Laughter.) After all, however, it was as important to know what not to do as to know what to do. (Applause.)

#### A CONNECTING LINK.

It seemed to him that the Agricultural Bureau system could make for nothing but good. It served as a connecting link between the departmental activities of the Government and the men who were engaged in primary production. He desired to enter a caveat and a warning based upon his experiences in the old country. One of the great difficulties there had been due to the enormous segregation of the population in the urban areas. In South Australia 52 per cent. of the population were within 10 miles of that hall. Where such conditions existed there was always the danger of getting a purely urban element versus purely rural element. Nothing was worse for the development of any country than that. They might ask:—"How does that affect us?" It affected them in this way. With a rural population it was very much harder, in the nature of things, to give concerted expression to their co-operative opinion than it was for an urban element to do so. Therefore there was a real danger unless the rural element in affairs—he did not mean merely the large station owner, but the whole of the agricultural community including the muscles and sinew of that community—realised that it had an obligation and a duty to instil and inspire what might be called the sense of real civic public service. He did not want to see the affairs of any one great country in the hands of any one section of that country. (Applause.) There was nothing worse for any country than that its affairs should be entirely in the hands of any one section or industry. Every industry, particularly the most important, should have a full and free opportunity to give to the country a full expression of its real concerted views. That was one of the great difficulties in the old country. There was no one agricultural body of opinion that represented the whole agricultural industry, whereas every section

of the industrial community could always get up in the House of Commons and say, for example, "This is the opinion of the steel industry," "This is the opinion of the iron industry," and "This is the opinion of the cotton industry," and the House always listened. Until three years ago the agriculturists were divided into sections. They had the owner of land getting up and saying, "This is what I want," the tenant saying, "This is what I want," and the laborer "This is what I want." The result had been that they got nothing. The delegates present belonged to the foundation industry of the State. As citizens they were bound up with the prosperity of the State, which again was bound up with the prosperity of agriculture. He urged that they should realise that they were South Australians first and agriculturists always. (Applause.)

#### FIELD FOR SCIENTIFIC WORK.

Referring to the difficulties to be solved, he alluded to the valuable work being done by Mr. Colebatch. The agriculturists in South Australia had one of the most munificent gifts that had ever been made to a State. Mr. Peter Waite had made that gift, and the Legislature was dealing with it. He hoped when the gift fructified there would be no gulf between the agriculturists and the Government. There was a big field of scientific work that could be centralised, and there was a large amount of work that must be decentralised. He emphasized the value of carrying on experimental farming and research on a commercial basis. Dealing with the wool question, His Excellency said he had spent a week on the Canowie Estate, which had proved an eyeopener to him. He had not believed that right through a flock such uniform character and substance in wool could be maintained. The experience had been a delight which he could not exaggerate. (Applause.) He wished them the prosperity which the agricultural industry deserved—and the country owed everything to its agriculture—and expressed the hope that they would not forget the debt they owed to those who had gone before, and the obligation they owed to those who would follow in days to come. (Prolonged applause.)

#### ADDRESS BY THE COMMISSIONER OF CROWN LANDS.

Mr. G. Laffer said the Minister of Agriculture would have liked to have been there that night, and they were sorry a temporary indisposition kept him at home. He had told His Excellency of the importance of the Congress. It was something in connection with an industry of which they were proud. (Applause.) Often they heard of what the Government of the day intended to do. It frequently ended at that. (A voice—"Carry on!") The Government intended to carry on. (Applause.) He referred to the progress of the Bureau, and to the splendid work done in connection with them by many officers, including the late Mr. Molineux and Messrs. Summers, G. G. Nicholls, and Finnis. So soon as the leave of absence of Mr. Nicholls expired, Mr. Finnis would be appointed to the position of Secretary to the Board of Agriculture. (Applause.) They all offered congratulations to the producers on the splendid prospects of the harvest.

It was some years since the outlook had been so bright. They hoped anticipations in that direction would be realised. (Applause.) He, with others, regretted the absence of stock to consume the feed available. He referred to what the Government was doing to encourage the producers in various ways. His Excellency had referred to the matter of experiments. He, personally, understood that the Government was taking steps to run at least one of the farms on a commercial basis. They appreciated the work of the present Director of Agriculture and others. (Applause.) Another innovation, suggested by Mr. Kelly, was that a summer school for farmers and farmers' sons over 18 years should be held at Roseworthy, and that had been approved. (Applause.) He referred to the work of the Produce Department. Designs for silos had been provided by the Director of Agriculture. He was pleased to see that farmers were showing greater interest in that matter. A herd-testing society had also been formed. He was pleased to see that tobacco culture had been taken up. One of the greatest problems was to deal effectively with the mallee lands. He was deeply interested in that matter. He had thought it would be a good thing for the Government to offer a bonus of £10,000 or £20,000 for a cheap and effective method of clearing the mallee. (Applause.) Australians had solved many problems of agriculture. Perhaps it was not a blacksmith's job, but one for the scientist. He thought of the soldiers on the land. Irrigation, too, was important. They were aiming at providing, so soon as possible, 2,600 farms on the Murray for soldiers, and when the programme was carried out there would be 9,000 such homes there. He referred to the valuable work being done by Mr. McIntosh on the river. It would be something to be proud of when the Murray scheme of settlement was effected. (Applause.) After the soldiers had been settled he hoped the Government would go on with civilian settlement there. On the Murray there was a better chance of success than elsewhere. The work generally was progressing, and it would produce tremendous wealth. (Applause.) Dealing with the egg and poultry industry, he eulogised Mr. Laurie for his zeal in the department. Mjr. Norton, who spoke highly of that officer and the industry, had decided to start his three sons in poultry raising and the egg business. (Applause.) He was sure the Governor would prove a great asset to the State. Apart from the social aspect, Sir Archibald and Lady Weigall had been most valuable. His Excellency had classed himself as an "agricultural crank," but they had discovered that he had a great fund of education on the subject, and his assistance and guidance were and would be greatly appreciated. (Prolonged applause.)

#### THE CHAIRMAN'S ADDRESS.

Mr. C. J. Tuckwell alluded to the gratifying development of the Agricultural Bureau on Eyre Peninsula, where delegates had cheerfully faced many difficulties and disabilities in connection with the conduct of their local meetings and conferences. Attention was directed to the valuable influence exerted by the Bureau system, not only in this State, but also in other parts of the Commonwealth. His

Excellency had expressed a desire to attend the business session of the following day and hear Mr. Jones's paper. As Chairman of the Board he extended a cordial welcome to Sir Archibald to be present. (Applause.)

At the instance of Mr. George Jeffrey (a member of the Board), seconded by Mr. W. S. Kelly (Vice-Chairman of the Advisory Board), an enthusiastic vote of thanks was accorded to His Excellency for his "fine and inspiring address."

### Tuesday, September 14.—Morning Session.

#### "GO ON THE LAND, DIGGER."

Mr. F. McMillan, of the Taplan Branch, read the following paper:—

This question will give scope for a very free discussion that should be beneficial. It is my intention to try and point out some of the difficulties that will confront the Digger going on the land, and at the same time give some hints that may possibly bear fruit. To go thoroughly into the question would need an abler pen than mine, and a special conference, so I will confine the paper to "A Post-War Calling," "The Beginner," and "A Mallee Selection."

We take it that you have decided not to follow your pre-war calling, and are considering what you will choose as a post-war calling. The land is having a good boom; seasons have been good, and prices are sound, and the air is full of stories of the free and easy life and the fortune that awaits the man prepared to go on the land. Perhaps a few sidelights on the picture will be of benefit and assistance in helping you to arrive at what amounts to a momentous decision in your career, and one that must not be made without having received your earnest consideration, as it means your future and the shouldering of responsibility, and financial burdens that you cannot fully realise until they are yours to carry. The average man on the land only realises an equitable rate of interest on his outlay, and, of course, a return for his labor. Some, of course, realise a lot more; that depends on geographical position and his industry. Do not be misled by the bright side of the picture. View it from all points, and remember that thousands of men on the land work very hard for a living, besides incurring obligations from the Government and banks that are not the least of the burden.

#### A RURAL CATECHISM.

The conditions of living are another factor that needs to be considered. Will you be content to (in the case of single men) go out, and on your own do the work in the field and in the camp, having a minimum of social life and sport, and, in the case of the married man, see your wife carry on without numerous domestic conveniences in the home that she has been used to, and your children having to travel a long way to school, or the possibility of no school to attend? Are you prepared to spend your energy and capital, and at the end of 12 months when you balance, find that, through circumstances over which you have no control, your reward is nil? Are you prepared to go

through it again, with possibly a like result? If you are, go on the land. If not, keep away from it, as it is more than likely that it is a phase that will have to be gone through. It is a case of carry on. Should you meet with a reverse and drop your bundle, unless you are financially strong you will have a liability to carry that will require a lot of mopping up. Do not be misled by thinking that farming is not a skilled calling, requiring and lending itself, as it does, to the expenditure of as much brain power as any other profession in order that you may get the best result from your farm.

Having decided to go on the land, you must qualify for your certificate by training at one of the Government training farms or with an approved farmer. I suggest going to an approved farmer for your experience, and in the district in which you intend to settle, as the methods of farming and implements used vary considerably throughout the State. With a farmer you have greater scope, and will find a better field for your initiative. Learn to know your work and the reason for your doing it. Discuss it with the farmer; if he is not communicative find one that is, and do not be afraid to advance any theory that you have on the subject. If there is a Branch of the Agricultural Bureau in the neighborhood, become an active member, and you will find the time very profitably spent. Do not be over anxious to start on your own account, as it is more profitable to gain your experience than to pay for it. The time spent in gaining experience is never wasted, and you will realise the benefit of a sound training in establishing your farm.

#### MAKING A SELECTION.

Presuming you have obtained your certificate and are satisfied that you have sufficient knowledge to start a place of your own, and having determined that the work is congenial, and that you will adopt farming as your future calling, the selection and securing of your land is the next step. I will not go into particulars of land open to application, as you can get all that data, forms, &c., at the Soldier Settlement Office. But it is here that your experience is going to stand you in good stead. Having worked in the district in which you intend settling, your knowledge of land values and the fertility of the soil will be of material benefit to you in the choice of your selection. Should it be an unimproved scrub lease that you are taking up, then the following may be of use to you:—You will need to consider the distance from nearest railhead or port, quality of land, and average rainfall. Say you select in fairly heavy timber, with approximately an average rainfall of 11in. Get on to it in the winter, do your mullenising in good time, preferably before the harvest; then, should you choose, you would be able to work through the harvest, thus adding to your knowledge and conserving your capital. Do not miss an opportunity to run your burn, as it is most important to run your fire and not take the risk of having rain over it, as so often happens. My advice is mullenise as much land as you will require for cropping for the first four years, then, if possible, fire all your green scrub at the same time as you run your burn. This burnt land will grow good feed, and as the shoots grow so you can cut them, and stack them around the standing timber. It perhaps means a little more work, but not nearly such



hard work, and the difference in land so cleared and land mullenised is more than worth the extra trouble. This applies to timber that is too heavy to roll. This practice is gaining favor in our district, and we have come to the conclusion that mullenised land is a dirty job compared to the fire-cleaned land. Be careful to leave a good area of standing scrub around your homestead and farm buildings, and shade and breaks are a valuable asset in the paddocks. Mallee, sandalwood, and belar posts are not a success, pine being the most suitable.

I have taken up enough of your time, and in concluding would impress upon you the necessity for giving the matter of going on the land your earnest consideration. The life is healthy, free, and full of interest for those that have the call. Anyone going out without the call is seriously handicapped, and apt, after struggling against his inclination, to give in, and leave a loaded burden for some other settler to shoulder. I feel sure that the members of the Agricultural Bureau will not only give the "Digger on the land" the benefit of their experience, but, should the case merit it, their practical support.

#### DISCUSSION.

In the discussion that followed considerable comment was passed on the merits of the various classes of timber for posts. Mr. F. Munday (Meribah) had found that red mallee posts stood for a longer period than pine timber. Mr. H. Lehmann (Waikerie) said that on the irrigation settlements white mallee posts lasted three times as long as pine posts. Mr. F. Chaston (Kingston-on-Murray) said nothing they could do for the "digger" going on the land was more than he deserved. He believed it to be a fallacy to put a fire through the standing green timber. He urged that returned soldiers should be given a free hand when they took possession of their blocks, and not compelled to plant any one particular class of crop. The "digger" should be allowed to use his own judgment. It had been stated that the Government intended to establish a canning factory at one of the new settlements on the River Murray. That, he did not think, was a fair proposition, for it would be carrying out an experiment at the expense of the "digger." Any experiment that was deemed advisable should be carried out on one of the older settlements. Mr. A. Cowley (Roberts and Verran) spoke of the position of the men on the West Coast who had gone to the war. Naturally they wanted to get land in these districts in which they had been brought up. Up to the present time they had not been able to do that. He believed it was a mistake to try and force the "diggers" on to certain classes of land.

Mr. G. Gardner (Koppio) said that not only the "digger," but any other young man who intended taking up land would receive valuable information from a study of the paper read by Mr. McMillan. He believed that the Government were perfectly justified in the position they had taken, that certain parts of Eyre Peninsula were purely a pioneering proposition, but, like the previous speaker, he agreed that those men who had spent most of their lives on the Peninsula would naturally want to take up land on the West Coast. If the men wished to settle there they should be allowed to do so, and he hoped

that anyone who applied for land on Eyre Peninsula would not be put off in the belief that it was a place not fit for civilization.

Mr. E. H. Parsons (Pinnaroo) said he would impress on any returned soldiers taking up land in a new locality to become thoroughly acquainted with the conditions of the district in which they intended to settle. The speaker also made a strong point of the value of working a good side line in conjunction with the ordinary pursuits of the farm.

#### IMPROVEMENT OF DAIRY STOCK.

Mr. H. W. Jones, of the Mount Barker Branch, read the following paper:—

The improvement of dairy stock is a subject which may be applied not to any one district, but to every dairying district throughout the State. Therefore in dealing with it it is not my intention to base my remarks upon any one particular breed, but to advise you when choosing a dairy herd to select always the breed most suited to the district in which you require it. If dairymen were to pay special attention to this, and only keep one breed, it would be a great improvement to the dairying industry, because it would be the means of preventing the crossing of so many breeds, some of which are totally unsuited to the climatic conditions of the district in which they are kept, and which eventually drift into the mongrel dairy herds chiefly met with in the country districts. It is a deplorable fact that the improvement of dairy stock should be so disregarded and that so many dairymen seem to be content to breed, feed, and strip away at the same ill-bred animals and their progeny year in and year out, irrespective of the poor returns that they must receive for their labors, and which eventually must end in hard work, hard cash, and hard words. That it pays to keep the best can be proved by the fact that near the city, where it costs most to keep a cow, the better types of dairy cows are kept. My advice to dairymen is do not keep cows and do not attempt to make the cows keep you, but keep your cows in such a manner that they will keep you, and to do this you will have to pay attention to breeding, feeding, shelter, and testing, and the sooner you realise this the greater your profits will be.

#### FORMING THE HERD.

In the formation of a dairy herd the sire plays a very prominent part. Never use a bull that is not pure bred, and if he comes from a cow with a good milking record the better will be the result. The use of ill-bred bulls is largely the cause of the many mongrel dairy herds we see about to-day.

A good dairy cow should have a long thin head, wide forehead, full prominent eye, be thin and hollow in the neck, straight along the back, light in the forequarters, wide and deep in the hindquarters, ribs well sprung, fine in the bone, hair, horns, and tail. The udder should extend high up at the back, and reach well along the belly, with milk veins prominent, and four teats wide apart and squarely set. A cow of this type will usually turn out to be a good milker and rich creamer. A good cow is always worth a reasonably high price, while a bad one, no matter how cheaply it may be bought, is sure to interfere with the profits of the dairy. The selection of dairy cows should always be

made from the herd of a breeder of reputable standing. I do not recommend buying dairy cows in the open market, although some good cows may have been purchased in this manner, but, like the three-card trick, it is a game of chance (the three cards employed being the seller, auctioneer, and buyer. The auctioneer holds the hand, and usually knows what will turn up). And one might well turn a deaf ear to some of the glowing remarks made by owners of some of the dairy cows which are disposed of in the open market. For instance, I have heard such remarks as these:—"She'll fill a bucket when she first comes in" (but the size of the bucket is not mentioned). Or "She is still giving a nice drop of milk." (It may be nice enough, if there were enough of it to taste.) Never have I heard a seller say, "This is the cull of my herd." When buying a cow in this manner pay no more for her than she appears to you to be worth, irrespective of what she may have done for her previous owner. Remember you may keep her in different surroundings and under reverse conditions to those which she has been used to. If you wish to raise the standard of your dairy it is a good plan to become acquainted with the herd of an up-to-date dairyman, who tests his cows. Purchase calves from him and rear them for yourself. Too often the heifers of a good breeder go to the butcher, while those of the mongrel breeder go to the ill-bred hull. And very often the good breeder is loth to send his heifer calves to the gallows, and would willingly accept a reasonable price for them otherwise.

#### THE FOOD SUPPLY.

Conservation of fodders is one of the most important factors to observe in the improvement of dairy stock. And unless the dairyman has a good supply of succulent and palatable fodders it is impossible for him to make a success of his venture. As an early green feed barley is one of the best, as it responds quickly to proper treatment. Lucerne and clover hay stands alone as a winter feed for dairy cows, if cut at the right stage and protected from the weather. This should be available from the beginning of March until the end of September. For summer fodders lucerne, mangolds, maize, and millet are all to be recommended. The main point to observe in the production of fodder crops is to produce a sufficient quantity to be able to supply your herd with their full requirements throughout the year, for if a dairy cow is allowed to fall away in her milk after she becomes in calf it is very rarely that she will increase again to any extent until after calving.

*Shelter.*—That a dairy cow needs to be protected from the heat of summer and the cold bleak winds of winter there can be no doubt. Improve your dairy stock by providing them with the necessary shade and shelter.

#### REGULATING THE YIELD.

How to secure a good supply of rich milk and maintain it throughout the year, the average dairymen have yet to learn. And I contend that it would be a great improvement to the dairying industry, and of great advantage to both the producer and consumer, if a system were introduced whereby the supply could be regulated. Permit me to illustrate to you a method which, I think, you will agree would overcome the difficulty. Take, for instance, a dairy herd of 12—10 cows and two heifers. Keep the bull apart from them, excepting when his services are required, which should be at the rate of one cow per month.

Keep the heifers from him until December and January. Rear two heifers each year from the cows calving in the autumn. These will make good for culling or loss. Mate your cows with the bull about a month or six weeks after calving, and give at least one month's spell. You may not be able to follow this system as accurately as I have placed it before you owing to little difficulties that may arise, such as a cow not getting in calf at the appointed time or getting bull calves when you require heifers. In this case you may be able to secure a heifer calf or two from a neighboring dairyman. Now let me explain why I suggest rearing the calves from the cows calving in the autumn. Your calves will then be on the chain or in the pen through the winter months, and if properly cared for will be ready to turn out to forage for themselves in the early spring by keeping them from the bull until they are 18 months old, which would be about Christmas of the following year. They would then be well over two years of age at calving time, which would take place in the early spring. The advantage of having your heifers calving in the spring time is that they have the best two seasons before them. They do not receive the severe check that they may do at a more critical time of the year. They keep their condition better, develop larger udders, give more milk, and as they do not have to feed at the rack they are not horned and knocked about by the older cows as they otherwise would be.

#### A HERD'S CAPACITY.

What a herd of 12 cows should be capable of producing during a lactation period of nine months each, or the 12 months of the year, I have estimated as follows:—4galls. a day the first and second months; 3galls. a day for the third, fourth, and fifth months; 2½galls. a day for the sixth; 2galls. a day for the seventh; 1gall. a day for the eighth; ½gall. a day for the ninth month. Total, 690galls. at 9d. per gallon is £25 per cow, or £300 per annum for 12 cows. Or the same quantity of milk of C/O 4.2 test is equivalent to 320lbs. of butter which at 2s. a pound is £26 per cow, or £312 per annum for 12 cows. These figures may appear to be high when one thinks that there are hundreds of cows in the State to-day not producing half of it. But they by no means constitute a record. And while one may not be able to average it with the whole herd, it would be a good goal to aim at.

Then, again, I ask is £300 too much for a man and his family or assistants to receive for milking, feeding, and caring for a herd of 12 cows week days, Sundays, and holidays throughout the year? Yet how many dairymen are doing it to-day for less than half that amount? In conclusion, I would like to say let "Progress" be your motto. Keep a herd of dairy cows that will not only be admired by yourself but by all who see them. Weigh and test your milk, and keep records of what your cows are doing, thereby knowing if they are returning you a fair profit. Make dairying a pleasure to yourself and family. This can be accomplished by improvement to your dairy stock.

#### DISCUSSION.

Mr. Brown (Port Elliot), in opening the discussion, said he was convinced that the Jersey-Shorthorn cross was absolutely the best class of cow for dairying purposes. Mr. F. Coleman (member of the

Advisory Board of Agriculture) congratulated the writer on the excellence of his paper. He strongly supported the paper in the contention that the dairying industry would be considerably strengthened by the use of pure-bred sires, and a market should be established where pure-bred bull calves could be purchased for breeding purposes. The Jersey was a breed that would stand their conditions as well as any other breed, but they must be treated with kindness. He wanted the farmers to recognise the policy of breeding only from their best cattle. He believed the cows should be kept for milk production rather than for dual purposes. Mr. W. R. Whittaker (Port Broughton) said that as a rule he believed the farmers aimed at getting the best class of cattle, but how were they going to tell when they secured a good animal? Most of the farmers were not in a position to purchase a tester. If the Government were going to assist the farmers they should send pure-bred bulls out into the country. The Government Dairy Expert (Mr. P. H. Suter) said the average annual production of the cows of the State was 320 gallons, which indicated a very wide field for improvement. Speaking of pure-bred sires, the speaker said that when purchasing an animal for the head of the herd, they should not be satisfied with only pure blood. Coupled to that there should be the records of performance of milk production on both the dam's and sire's side. At the present time Mr. Shillabeer, of Kilkenny, owns an Illawarra Short-horn cow which held the world's record for milk production. Testing was being taken up by the Government, and if a farmer wanted his herd tested there would be no difficulty in having that done if he placed himself in communication with the Department of Agriculture.

#### THE GOVERNOR: A CRITIC.

His Excellency the Governor (Sir W. E. G. A. Weigall, K.C.M.G.) congratulated Mr. Jones on the excellent standard of his paper. Referring first of all to the remarks made by Mr. Brown, of Port Elliot, he said he had no doubt that that gentleman was quite satisfied from the financial aspect of the question, but in reality he was living in a fool's paradise. Continuing, Sir Archibald said:—Let us look at that question from the broadest point of view. He is satisfied if he gets 600 gallons of milk going 4 per cent. of butter fat for every cow per lactation period. He says he achieves that by crossing two breeds. But where does he get to at about the end of the second generation? He gets a three-cornered breed with the blood of two or three breeds in it, the virtues of none, and the vices of all of them. (Laughter and hear, hear.) I will give him all his milk of the same quality from a pure-bred breed, with none of the disadvantages in regard to future generations. We have had all these difficulties at Home, and are a very much older country. We made our mistakes, and I want South Australia to profit by the mistakes made in other countries. (Applause.)

#### ABSOLUTE CONFIDENCE.

Continuing, His Excellency said there were few things he could speak on with such absolute confidence as this. "Do, for goodness

sake," he urged, "make up your minds what breed you are going to use and the purpose you are going to put it to, and then stick to it." He did not wish to put up one breed as against any other. He was sure, however, that either the Jersey or the Guernsey—he had had more to do with the latter—would suit them if they wanted a really high quality heavy butter fat-producing breed; and, having got it, they should keep it pure. If they were content with heavy yields and 4 per cent. of butter fat, there was no end of breeds available to them. Naturally, he was wedded to the Shorthorn. For that reason he had proved that one could have a dual purpose breed. He had obtained—from an exceptional cow in his herd, it was true—1,800 gallons of milk in a lactation period of nine months last year. (Applause.) Furthermore, the cow had bred a calf that had won first prize as a six months' old at the Royal Show in England this year. The advantage of breeding that class of animal was this. The breeder not only got his milk of a sufficiently high quality, but if anything went wrong with (say) a quarter, the beast immediately put it on her back, and one got beef straight away.

#### SELLING THE BULLS.

The difficulty he had found at home was to sell his Guernsey bull calves. There was only a limited number of people out to buy Jersey or Guernsey bull calves. The majority of the herds were in the hands of the large landholders and what he might term the luxurious breeders—people who wanted a high class of milk for their own households. The average dairyman usually went for a larger animal, because he got the yield of milk and sufficiently high quality bull calves—assuming that they were from a pure registered Shorthorn herd—which would always sell readily, even to the graziers. Such animals were easily fattened, put on beef of the best quality, and worked like thoroughbred horses. In conclusion, His Excellency again appealed to dairymen to stick to the pure breed. They should make up their minds whether they were going in purely for high-quality milk. From the consumers' point of view those who did this were conferring an immense benefit, particularly upon the child life of the community; and in a new country like this, especially in the light of the last five years' experiences, it was important that they should do everything possible to build up a healthy child life. (Applause.) If that was their aim then he said, "Stick to the Channel Island breeds." If they were out for the dual purpose animal they should favor a dairy breed, the females of which, if they went wrong, would still give a return, and all the bull calves would assure a return because there would be another department—the beef department—open to them. (Applause.)

#### A TRIBUTE TO THE BUREAU.

Sir Archibald's last words as he resumed his seat were:—"I have spent the most pleasant morning I have had since I came to South Australia."

### PREVENTING SANDY LAND FROM DRIFTING.

Mr. F. Lock (Dowlingville) contributed a paper on this subject, which was read by the Acting Secretary of the Advisory Board (Mr. H. J. Finnis). The paper was as follows:—

It seems rather an act of presumption attempting to write on this subject, but our sandy soils are a useful asset if we can only control them. Could we do so in times of drought they would grow something when heavier soils fail. The drifting of soils is so serious in some districts that there should be some experiments tried to see if we can find some methods that would cope with the trouble. We can put the land that has a tendency to drift into two classes:—

(1) There is one kind of sandy soil that will get a move on even when stock are moving about on it. At times it will go without any attempt having been made to cultivate it. In other words, it never sets hard. With this kind of soil one is almost at his wits end to know how to deal. It is just about fatal to fallow land of this nature; and if you do deal with it in the ordinary way you are very fortunate if you come through without losing your crop and a large portion of your soil as well. Now, I suggest that this kind of land be prepared for a crop somewhat in this way. Do not touch it with an implement unless the ground is thoroughly wet. The more moisture there is while the ground is cultivated the better it will be for it. It is advisable to use a cultivator instead of the plough. Drill the seed in when the land is in the same condition. Sow some kind of grain that gets away quickly. If you can procure some barley fairly free from smut, sow it without pickling. Your main object is to get the growth in the shortest time. Now, if you are fortunate in having six or seven weeks of calm weather, your crop will most likely get away. For argument sake we will say it has done so, and you get a fair crop to harvest. Be careful how you treat the land for the next season. We know that it will be all right as long as the stubble is there. Do not burn the straw or you will be in as bad a fix as ever. Try to get a crop to grow every year. Now that we live in the times of disc ploughs, harrows, cultivators, drills, &c., we can deal with the straw. You may get a dirty crop, but you have gained your first object, that is to keep the land in your own paddock. You may decide to cut the second crop for hay, being dirty. Do not try and get down as close to the ground as you can with the binder to get every inch. Cut fairly high, so that what you leave, with the root matter in the soil, will help to bind the soil together until you get something growing again.

### AN EASIER PROPOSITION.

The second class of land is far easier to deal with, but it must be handled with care. It will set with the stock running over it in wet weather; that will put a crust on it. The cultivator is better than the plough to work this land, and it is better for the land if not for the crop. If you go over the land when it is only moist underneath and firm on top it will break up a bit rough on top. The plough would put the rough under and the loose on top. Always try to keep a rough

surface. If you treat this kind of soil the same way that you treat clay soil you will soon meet disaster. We know that prevention is better than cure, but with all our trying at times we meet with unlooked for conditions. We will suppose that we have done all we can and after the crop is growing a heavy rainstorm sets in, with strong winds afterwards. The heavy rains bring the sand on top, and it soon begins to move. But many of us have noticed that there are certain starting places in some paddocks. It may be a roadway or cattle track, a special ridge of sand; the land does not spread very far with the first gale, but if not attended to before the next gale of wind it gets beyond our control. Now, there is a method that has been tried by a few people with some success. That is to spread something over these starting places. Get to work as soon as you can after the first storm. There should have been some preparation for this. In the event of need, conserve all the stable manure you can and partly rotted straw. Spread these things on the drifted places, and endeavor to stop them from extending until the best part of the crop is ruined. If it is thought advisable to graze these lands sometimes instead of cropping them, drill something in the stubble. It may be lucerne, rape, mustard, or barley. But whatever you do, do not graze too close. Leave enough matter on the land to keep it together.

#### A WORLD-WIDE PROBLEM.

The Superintendent of Experimental Work (Mr. W. J. Spafford), who opened the discussion, said the question brought forward in the paper was at the present time a very important one. The question of sand drift was by no means a local one; it was world wide, and recognised as being extremely difficult to overcome in all countries, so much so that Mr. A. D. Hall, one of the most prominent agriculturists of the day, when in Australia with the Science Congress in 1914, took as the subject for one of his addresses "The Reclaiming of Sandy Lands." Even at the present time in England, Germany, Holland, and Belgium, all thickly populated countries, there were large tracts of uncontrolled sandy lands. The fact remained that sand was never good and always bad, and the unfortunate part was that some of the farmers had a good deal of sand to deal with. The chief trouble was that the sand had a tendency to shift. That, of course, was caused by the lack of organic matter. They knew that fair crops could be grown on sand supplied with plenty of organic matter, but as soon as that disappeared the soil would not hold together. The writer's method of cropping the soil every year was hardly correct. When there was not much fertility in the sand it was wrong to expect to grow a crop every year. The best plan to adopt was to crop seldom and stock heavily. Whatever crops were grown should be taken off by live stock. Unless they had at least 20 in. rainfall on sandy soils the best proposition was to let the stock harvest all the crops. All sandy soils would drift if they were cropped to excess and harvested by ordinary methods. Mr. O. Forbes (Yadnarie) said it was a good idea to fence the sandy country in small strips, say, 20 chains wide, and leave wind breaks of mallee.

*(To be continued.)*



## THE AGRICULTURAL OUTLOOK.

### REPORTS FOR THE MONTH OF SEPTEMBER.

The following reports on the general Agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

*Booborowie.*—Weather—On the whole the weather was mild. From the 1st to the 5th was without rain, and then very wet weather prevailed to the 19th, when no more rain was registered for the month; 2.57in. of rain was gauged for the month. Crops—These are now making rapid growth, and there should be some very heavy grain and hay yields in this district. Natural feed is becoming plentiful. Stock are all in very good condition. Pests.—Rabbits are again making their appearance in the hilly country. Miscellaneous—Shearing is in full progress.

*Eyre Peninsula.*—Weather—The early part of the month was quite wintry, but the latter half has been good, spring conditions. Up to date (24th) 2in. of rain have been registered, i.e.,  $\frac{1}{2}$ in. above the average for the month, and the total for the year is now over 14in.—a good  $\frac{1}{2}$ in. above the average for the nine-monthly period. Compared with the two wet seasons, 1916 and 1917, we have not had quite as much useful rain for the crops, but crops are growing wonderfully well and making much straw growth. Undoubtedly some hay yields will exceed any previous yields received in the district. The ranker patches are standing well, and crops generally are free from disease, although a little rust is noticeable. The mustard weeds are plentiful. Turnip and sheep weed are also noticed in parts of the district. Ideal conditions have prevailed from the 20th instant for cultivating and cleaning fallows. Natural feed is very plentiful, and stock are in good condition.

*Turretfield.*—Weather—During the early portion of this month nice rains fell, and 189 points were registered. The latter part of the month has been dry; drying winds and hot days with frosty nights have been prevalent. Crops—The crops in most instances are good, but rubbish is very thick in some of the fields, and is choking the wheat badly. Natural feed is plentiful, and the natural herbage has made good growth. Stock looking well, and will continue to improve in appearance and condition. Ploughing is finished, and teams are at work on the fallows, which are dirty and hard. A nice rain would be of help where the land has set hard.

*Veitch.*—Weather—Rain gauge has registered 3.10 points up to date. Average for same month, 177 points. This rain was registered in nine falls, and has proved a splendid soaking rain. Crops generally are making exceptionally fast growth, and in some cases are rather too far advanced, showing rank growth. The prospects for good returns are the best seen in this district for many years. Natural feed is now growing fast and giving good stock feed. Stock—All livestock in good condition. Pests—Nothing troublesome. Miscellaneous—All fallowed fields require good cultivation following the heavy rains, as weeds of all description are now showing up.

# HIGHEST HONORS FOR EFFICIENCY.

"Commonwealth" .....	"Union" Brand Cement
"Gisko" .....	Rabbit Poison
"Hick's" .....	"Ideal" Poison Carts
"Hurst's" .....	Wool Bale Fasteners
"Destruo" .....	Fly Traps
"I.X.L." .....	Rabbit Poison
"Jumbuck" .....	Sheep Branding Fluids
"E.R.B." .....	Crutching Outfits
"Koerstz" .....	Wool Presses
"Quibell's" .....	Liquid and Powder Sheep Dips
"Wolseley" .....	Sheep Shearing Machinery
"Kerol" .....	Disinfectant
"Torfol" .....	Sanitary Paint
"Prophylactic" .....	Sheep Lick

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AND ALL BRANCHES.

## DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, report on October 1st:—

**BUTTER.**—Increasing quantities of both cream and butter have been marketed, and owing to the favorable weather conditions consignments have come forward in good order. Local demand, considering the high prices ruling, has been exceptionally good, and all surplus butters have been placed in cool chambers on account of the Imperial Government contract. Top grades well maintained, but dairy lines show an easing, the quality in some instances not being up to standard owing to weediness. At the close of the month factory and creamery, in prints, sold at from 2s. 5½d. to 2s. 6½d. per lb.; best separators and dairies, 2s. 3d. to 2s. 4d.; fair quality, 2s. 0½d. to 2s. 1½d.; store and collectors', 1s. 11d. to 2s. per lb.

**EGGS** are in better supply than was anticipated. Local picklers and pulp manufacturers have been busy in their operations, which fact has caused prices to rule high for the time of year. Present quotations:—Hen eggs, 1s. 7½d.; duck, 1s. 8½d. per dozen.

**CHEESE.**—South-East factories have increased their forwardings considerably during the month, and also heavy quantities of Queensland cheese have been placed on this market, so that rates have eased somewhat. New make, 1s. 3½d. to 1s. 4d.; matured, 1s. 5d. per lb.

**HONEY** is a very scarce commodity, only odd lots coming to hand, and the anxiety of some buyers to obtain supplies has caused the market to further improve. Prime clear extracted selling up to 9d.; second grades, 6d. to 6½d.; beeswax, 2s. per lb.

**ALMONDS.**—As last season's crop is practically cleared, the market at moment is bare. Brandis, 10½d.; mixed softshells, 9d. to 9½d.; hardshells, 5½d. to 6d.; kernels, 2s. 2½d. per lb.

**BACON.**—Owing to the shortage in supplies of the live animal, bacon has been very scarce, and high prices have ruled throughout the month. Best factory cured sides selling at 1s. 7½d. to 1s. 8d.; middles, 1s. 9d.; hams very saleable at up to 1s. 11d. per lb.

**LIVE POULTRY.**—Buyers have been in full attendance at the various auctions, but unfortunately supplies have not been nearly equal to demand. This has resulted in spirited bidding, and in some cases record figures have been obtained, with the market at the end of the month closing firm. Heavy-weight table roosters sold at from 6s. 3d. to 8s. 9d. each; nice conditioned cockerels, 5s. 6d. to 6s. 2d.; plump hens, 5s. 9d. to 7s. 9d.; light birds, 4s. 11d. to 5s. 8d.; ducks, 4s. 9d. to 7s. 6d.; geese, 7s. 6d. to 9s. 3d.; pigeons, 1s. 1d. to 1s. 4d. each; turkeys, from 1s. 9d. to 2s. 3d. per lb. live weight for good to prime table birds.

**POTATOES.**—Supplies of local new are now being marketed, although quantities so far are light. In a few weeks, however, there will no doubt be better supplies, as the crops appear to indicate good returns. Meanwhile requirements are being met with Victorians, and it is expected that Western Australian new potatoes will be on the market within a month or six weeks. **ONIONS.**—Quantities held are now very small, and new are commencing to come in. Quotations are:—Potatoes, £15 to £16 on trucks Mile End; new, 28s. to 32s. per cwt. Onions, 36s. to 30s. per cwt.

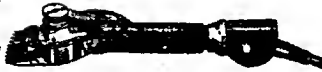
Oil and Petrol  
Engines

**Lister**  
BRITISH BUILT

Sheep  
Shearing  
Machine.



The LISTER  
Hand Piece.



LET US DEMONSTRATE THIS TO YOU.

Two things are necessary in order to give the greatest return from your Flocks:—

- (1) EVERY PARTICLE OF WOOL.
- (2) Shearing done in the quickest possible time.

The LISTER NEW HAND PIECE does both.

Install a British **LISTER** Oil and Petrol Engine

NO POWER USER SHOULD BE WITHOUT ONE.

VISIT OUR SHOWROOMS and see this grand little engine.

— THE —

**"L.K.G." MILKING MACHINE**

Has many imitators, but leading dairymen have proved that no other machine will give equal results.

**DON'T BE MISLED.**

THE "L.K.G." IS THE ONLY MACHINE THAT EMBODIES THE RIGHT PRINCIPLE, AND HAS STOOD THE TEST OF YEARS.  
MAKE YOUR INQUIRIES TO-DAY.

The **"ALFA LAVAL" Cream Separator**

Used by 3,000,000 farmers who wanted and got the best and closest skimming. All who put the "Alfa" to the test declare that for clean skimming, easy turning, and all round general efficiency it stands supreme. Prepare for the coming season by purchasing an "Alfa" now. Allowances made on old machines. Write for Illustrated Catalogue and full particulars.

SOLE AGENTS for these Big Money and Labor Savers:

**A. W. SANDFORD & Co., Ltd.,**  
GRENFELL STREET.

## SHORT COURSES IN AGRICULTURE.

On the recommendation of the Advisory Board of Agriculture, the Government has approved of a proposal that short courses for agriculturists should be held at Roseworthy Agricultural College. On several occasions the inauguration of a short course of instruction for farmers in this State has been discussed, and in 1909 the Government authorised a scheme for the establishment of classes at Roseworthy Agricultural College. At that time, unfortunately, the response was disappointing. Only eight applications were lodged, and it was therefore decided to abandon the scheme. Eleven years have now elapsed since that fruitless attempt to evoke enthusiasm in farmers' classes was made. During the interval the stimulating influence of the war has been felt, and it is possible that the educational facilities afforded the returned soldiers while they were on active service have enabled them to realise the value of education in agriculture to a much greater degree than in pre-war times. In the belief that this is so, and that consequently the time is opportune for the provision of a farmers' short course, the Advisory Board of Agriculture recommended the adoption of a special course of two weeks' duration to be held in July at the Roseworthy Agricultural College, the course to be under the control of the principal of the College, and all students to be subject to the College rules and regulations, the lectures and demonstrations to be carried out by departmental and College officers conjointly; the course to be open to farmers and farmers' sons who are not under 18 years of age; special accommodation to be provided, and a fee charged to cover all living expenses; a special syllabus to be arranged, and each student to be required to state which subjects, if any, he desires to omit from his course. The syllabus will comprise some of the following subjects:—Agriculture.—General—Soils and their properties, soil tillage, farm crops, manures and manuring, silos and silage, seed selection and plant breeding, diseases of crops. Dairying—Testing milk and milk products, butter making, bacon curing. Livestock—Principles of breeding, the points of a horse, management of dairy cattle, pig farming, fat lamb raising, wool classing, poultry farming. Dietetic—Feeds and feeding. Horticulture—Establishment and management of orchards, diseases of fruit trees and vines. Veterinary Science—Examination of horses for soundness, common diseases of livestock, parasites of farm animals, parturition, horse shoeing. Other subjects which could be included are:—Farm bookkeeping; botany; weeds, noxious and unproclaimed; germination of seeds; chemistry—chemistry of soils; fertilisers and waters.

## ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, September 8th, there being present Mr. C. J. Tuckwell (Chairman), Professor Arthur J. Perkins (Director of Agriculture), Captain S. A. White, Messrs. F. Coleman, H. Wicks, Geoffrey, A. M. Dawkins, T. H. Williams, F. Coleman, and H. J. Finnis (Acting Secretary).

*Short Courses of Instruction for Farmers.*—Some time ago Mr. W. S. Kelly suggested that a short course of agricultural and kindred subjects should be instituted for the farmers of this State. A committee reported on the matter, and the Board decided to recommend the Government to institute classes as suggested.

*Veterinary Surgeon for Eyre Peninsula.*—For some time past branches of the Agricultural Bureau on the West Coast have been urging the appointment of a veterinary surgeon for Eyre Peninsula. This matter was submitted to the Minister, who has intimated that arrangements have been made for an inspector of stock with considerable experience of stock diseases to be appointed for the district comprising Eyre Peninsula and Yorke Peninsula. In view of the financial position he could not recommend Cabinet to authorise the appointment of a veterinary surgeon for Eyre Peninsula and other portions of the State. No information had been submitted to indicate what the health of the stock on Eyre Peninsula was such as to necessitate a Government veterinary surgeon being stationed there. The Secretary was instructed to communicate with the Branches interested in terms of the Minister's minute.

*Closer Settlement.*—An inspection of the country between Minnipa and Gawler Range was urged at the last conference of Central Eyre Peninsula Branches of the Agricultural Bureau, the object being the closer settlement of the district. It has been ascertained from the Lands and Survey Department that a considerable portion (approximately one-half) of the area referred to is held under pastoral leases, which do not expire until 1943. It is proposed to have an inspection made of the area and of other lands in the locality as soon as a surveyor can be spared for this work.

*Suggested Removal of Kangaroos from List of Protected Animals.*—A communication was received from the Nethererton Branch urging that steps should be taken to prevent kangaroos from damaging growing crops. After due consideration the Board decided to ask the Government to send an officer to investigate and report.

*Paruna Forest Reserve.*—An intimation was received from the Commissioner of Crown Lands that no increase could be made in the quantity of timber allowed each settler from the Paruna Forest Reserve. It was decided to advise the Branch accordingly.

*Reduction of Freight on Stud Stock and Seed.*—The Commissioner of Railways intimated that he was quite unable to agree to any reduction in the rate for the carriage of stud stock, as suggested by the Conference of South-Eastern Branches of the Agricultural Bureau.

*Advances to Settlers for Land Fallowed.*—A communication was received from the Nunkeri and Yurgo Branch asking that advances under the Advances to Settlers Act should be made with a view to encouraging maximum areas being fallowed during the present season. The Secretary for Lands intimated that there was no provision in existing Acts which would enable advances to be made on fallow, as suggested by the Nunkeri and Yurgo Agricultural Bureau. Under the Drought Relief Act fodder had been supplied to farmers to feed their horses during the fallowing season. To carry out the suggestion made, legislation would be necessary.

*Homestead Blocks for Afforestation.*—A communication was received from the Longwood Branch asking that the land now being offered for homestead blocks on both sides of the Onkaparinga River from Mylor down to the lower end of the Hundreds of Noarlunga and Kuitpo should be used for afforestation. The Branch considered such land unfit for occupation. The Board decided to refer this matter to the sub-committee appointed to inquire into afforestation.

*Bonus for Planting Timber.*—The following resolution was submitted by the Rosy Pine Branch:—"That the Government be asked by the Advisory Board to pay a bonus to any person planting trees, suitable for timber, maturing in four or five years." The Board directed the Forestry Committee to suggest conditions under which it was thought a bonus could be advantageously offered.

*Resolutions from Country Conferences.*—Southern Districts: (1) "That this Conference approves of a policy of afforestation for the southern districts and elsewhere, and urges on the Government the necessity for carrying forward such a policy." It was decided to transmit the matter to the Minister with the strong support of the Board. (2) "That in the opinion of this Conference so long as the words 'hedge and breakwind' remain in the proclamation declaring boxthorn a noxious weed it will remain inoperative." The Board decided to forward the resolution to the Minister. Pinnaroo Lines Branches: (1) "That this Conference asks the Government to reduce the freight on fencing materials to the same rate as that for firewood." It was decided to transmit the matter to the Minister. (2) "That this Conference recommends that the Government be asked to plant a certain area of olives on the Parilla Forest Reserve." It was decided to forward the matter to the Minister with the support of the Board. (3) "That this Conference is of the opinion that under the present conditions of the markets of the world it is necessary that the Wheat Pool be continued." The Board decided to transmit the resolution to the Minister.

*Destruction of Starlings.*—A communication was received from the Walla Walla Branch of the New South Wales Agricultural Branch

asking for information to assist in the destruction of starlings. The Secretary was instructed to ask Captain White to furnish a report on the matter.

*Shoot Scorchers Bonus.*—A communication was received from Mr. J. F. Pitman, of Coonalpyn, in which it was suggested that the bonus offered by the Government for the manufacture of an efficient shoot scorcher should be withdrawn. The Secretary was instructed to refer the matter back to the Coonalpyn Branch for an expression of opinion on the suggestion put forward by Mr. Pitman.

*Sanitation in Country Places.*—The Acting Secretary brought under the notice of the Board a booklet written by Dr. W. Ramsay Smith, M.D., D.Sc., F.R.S. (Edin.), entitled "The Theory and Practice of Sanitation in Country Places, including the Bacteriolytic Tank System." The Secretary was instructed to communicate with the Minister and ask that sufficient copies of the publication might be secured to permit of each Branch of the Agricultural Bureau receiving a copy.

*Forestry Committee.*—On the motion of Captain White, seconded by Mr. F. Coleman, it was decided, "That the Minister of Agriculture be asked if there were any reasons for preventing the proposed visit of the Forestry Committee of the Advisory Board to the Murray for the purpose of inspecting timber along the banks, and whether any action has been taken in any other quarter to carry out this work. If so, what has been done." It was also decided, "That the Forestry Committee be asked to formulate its ideas in regard to the matter of investigating forestry in South Australia."

*Life Members.*—The names of Messrs. B. Wundersitz (Hartley), A. J. Bray (Gawler River), and F. Cole (Renmark) were added to the list of life members of the Agricultural Bureau.

*New Branches.*—Approval was given for the formation of Branches of the Agricultural Bureau at Younghusband and Glossop, with the following gentlemen as foundation members:—Younghusband—A. Pilmore, G. Brinsley, G. Mann, H. Putland, H. Bates, K. Wienert, D. Brienkly, A. J. and F. Wienert, J. Chambers, N. G. Kelly, H. Gowling, H. Drogemuller, J. Knight, C. and G. Gogel, H. Baumgurtel, W. Read, R. Hartmann, S. D. Brinkley, M. Knight. Glossop—T. Partridge, W. Campbell, L. Mander, A. Gardner, C. Ralph, A. James, C. Leaney, A. West, R. E. Howse, N. Scholz, A. Ebbs, H. Clampett, L. Dawson, M. Nicholas, H. Moss, J. McKay, C. Dansie, A. Moodie, W. Underwood, A. Harvey, R. DeLaine, M. Borden, — Hamlyn, — Givis, B. Stacey, W. Morrell, J. Robertson, M. Rofe, W. Ellis, E. Scott, J. Hatch, A. Creed, H. Tratt.

*Branch to be Closed.*—It was decided to close the Mitchell Branch.

*New Members.*—The following names were added to the rolls of existing Branches:—Moonta—J. Palin, N. Macauley, C. Macauley; Rosy Pine—R. Lee, I. Whillas, A. W. Flaherty, H. Richards, C. Marshall, H. Guscott, J. C. Guscott, G. C. Alterman; Red Hill—R. Trenowden, C. W. Stone; Yadnarie—E. J. Dolling; Netherton—L. G. Wray, F. Ridge, W. Edwards, A. McLean, A. Coates; Gumeracha—



W. V. Bond; Murray Bridge—F. Halliday; Rosedale—V. Hocking; Parilla—L. V. Shannon; Kongorong—P. Hay, D. MacNicol, C. Aslin; Wynarka—L. Perrers, M. N. Blacket, J. W. Murphy, J. R. Rackham; Kingston-on-Murray—H. Cole; Ashbourne—W. Shaw, sen., Will Shaw, L. Shaw, A. South, D. Whittam, K. Whittam; Wudinna—A. W. H. Barns; Salisbury—H. Briggs; Ashbourne—G. Kirkham, O. Kirkham; Mundoorra—F. R. Broughen, J. S. Casey; Morehard—C. H. J. Halliday; Neeta—L. Pollock, E. Day; Mindarie—J. McCliland; Port German—W. T. Hillam, A. J. Hutchison; Saddleworth (Ladies)—Mrs. A. Walsh; Blackheath—W. J. Pym, L. S. Pym, C. T. Pym; Saddleworth—E. Garrett; Parilla Well—E. C. Slater; Wilkawatt—A. B. Neville; Butler—C. J. Stewart; Edillilie—A. Starke, T. C. Sachs; Amyton—A. R. Fuller, L. H. Milis; Two Wells—L. Wilson; Tarcowie—W. H. Thomas, O. W. Davisen; Borrika—L. Hall; Lameroo—L. Orwell; Borrika—J. H. Miller; Moorook—F. B. Carne, H. C. Carne, A. G. Carne, R. Herriot, A. Crocker, L. Perkins; Millicent—J. J. Wallis, — Guerin; Watervale—N. Reed; Narrung—S. F. Ive, H. Shepperd, E. Wyatt, W. Howie, N. Howie, J. Myren, J. M. McBeath; Alawoona—S. Finey, B. Finey, T. Dart, O. Watkins, W. Paull, C. Paull, E. J. Smith, F. E. Holland, T. W. D. Willison, J. Whitehead, G. Williams, H. Blackford, W. Patterson, A. C. Patterson, W. Dart, F. A. Lovegrove, C. Tiller, G. O'Connor; Lenswood and Forest Range—B. J. Lawrence, R. J. Townsend; Brentwood—A. L. Vanstone; Kimba—A. C. Frick, H. E. Frick; Strathalbyn—J. Mc. Cheriton, A. J. Donaldson; Morehard—J. Scriven; Miltalie—D. Bagnell, C. Degner; Beetaloo Valley—W. Petrie, J. Halse, J. Fradd; Sandalwood—E. W. Irwin; Green Patch—F. H. Provis; Monarto South—F. W. Liebelt, H. Rayson; Lenswood and Forest Range—A. Chigwidden; Wilkawatt—D. Flannagan; Lone Pine—W. Petras; Tarcowie—J. McCarthy; Laura—H. S. Stevens; Kilkerran—A. Koch, J. S. Williams, C. Crocker; Ramco— — Swift, — Thomas; Mount Barker—L. Frame, H. Springbett, E. Springbett, W. Vilaebach, A. E. Hunt; Angaston—W. H. Craig, J. Bauer, H. W. Dorries, G. Vaughan; Berri—R. J. Pengelly; Kingston-on-Murray—E. S. Coop, R. M. Dyer, J. A. Pobke; Longwood—S. Smith; Cleve—A. D. Tyrell; Borrika—S. A. Lester; Lone Gum—G. W. Barns, A. J. Cook; Rosy Pine—J. Marcus, R. Marcus, J. F. O'Loughlin; Minnipa—H. Redding, R. P. Rowen; Salt Creek—R. H. Hornhardt, H. C. Hornhardt; Moonta—R. Gregory, A. H. Carne; Willowie—G. J. Bull, J. H. Simmons, W. A. Moar, C. J. Sanders; MacGillivray—J. W. T. Fielder, S. H. Fielder; Kybybolite—W. A. Hallett; Lucindale—R. J. Haggett; Wirrabara—E. J. Hollitt, G. A. Obst.

## EGG-LAYING COMPETITION, 1920-1921.

HELD AT THE PARAFIELD POULTRY STATION, PARAFIELD, UNDER THE DIRECTION  
OF D. F. LAURIE (GOVERNMENT POULTRY EXPERT AND LECTURER).

TWELVE MONTHS' TEST STARTED ON APRIL 1st, 1920, AND TO TERMINATE MARCH 31st, 1921.]

## SECTION I.—LIGHT BREEDS (SINGLE TESTING). THREE PULLETS IN EACH ENTRY.

Name and Address.	Bird No.	Month ending 30/9/20.	Score to Date.	Bird No.	Month ending 30/9/20.	Score to Date.	Bird No.	Month ending 30/9/20.	Score to Date.
WHITE LEGHORNS.									
Bertelsmeier, O. B., Kensington ..	1	20	55	2	22	40	3	21	51
McDonnell, G., Anburn, Melbourne	4	19	51	5	20	61	6	13	62
Stacey, R. S., Hamley Bridge ...	7	19	35	8	18	23	9	23	57
Ryan, J., Silvan, Victoria .....	10	21	51	11	24	86	12	22	49
Moritz Bros., Kalangadoo .....	13	20	81	14	19	59	15	22	85
Brown, J. P., Ballarat, Victoria ..	16	20	31	17	17	54	18	20	55
Rogers, A. H., Richmond, S.A. ...	19	16	29	20	22	31	21	18	50
Eckermann, W. P., Eudunda .....	22	24	51	23	21	50	24	23	31
Burton, C. J., Mallala .....	25	—	4	26	18	26	27	10	10
Beythien, E. W., Scott's Creek ..	28	18	20	29	19	22	30	17	25
Moritz Bros., Kalangadoo .....	31	23	46	32	20	63	33	23	74
James, H. B., Kew, Victoria .....	34	18	38	35	20	40	36	24	76
Monkhouse, A. J., Woodside .....	37	21	41	38	21	50	39	22	67
Crear, H. S., Broken Hill .....	40	17	28	41	21	65	42	23	40
Roantree, W., Broken Hill .....	43	5	6	44	11	12	45	13	21
Beythien, E. W., Scott's Creek ..	46	21	28	47	16	24	48	17	23
Hocking, E. D., Kadina South ..	49	13	19	50	14	36	51	21	38
Raymoor Poultry Farm, Kilkenny	52	19	24	53	20	44	54	16	19
Keegan, H. V., Wallaroo .....	55	16	16	56	19	22	57	—	—
Lampert, Mrs. S., Piccadilly ....	58	12	50	59	22	49	60	19	49
Parsons, E. H., Pinnaroo .....	61	25	46	62	17	21	63	20	32
Raymoor Poultry Farm, Kilkenny	64	23	62	65	22	52	66	24	32
Stevens, H. J., Broken Hill .....	1	25	54	2	22	46	3	22	47
Glenelg River Poultry Farm, Mt. Gambier	4	24	80	5	23	79	6	23	90
Willington, Mrs. G., Milang .....	7	23	39	8	22	30	9	18	44
Rutledge, M., Broken Hill .....	10	20	60	11	21	28	12	18	34
Vercoe, Wm., Sefton Park .....	13	23	48	14	23	71	15	24	27
Stockman, A., Goodwood .....	16	19	39	17	22	55	18	25	33
Ritter, Wm., Magill .....	19	23	42	20	22	48	21	22	48
Blake, Mrs. M., Berowra, N.S.W.	22	25	51	23	25	55	24	26	59
Stidston, M., Cheltenham .....	25	19	40	26	24	73	27	19	80
Bamford, W. H., Glenelg .....	28	22	67	29	20	87	30	19	72
Windyridge Poultry Farm, Blackwood	31	22	59	32	21	52	33	19	50
Howie, H. H., Mount Gambier ..	34	22	69	35	24	60	36	23	62
Green, A. J., Crystal Brook .....	37	24	71	38	26	96	39	22	35
Green, F. W. H., Monteith .....	40	24	85	41	21	75	42	22	69
Rivett, J., Lockleys .....	43	—	—	44	—	—	45	—	—
Small, E. W., Mount Gambier ..	46	22	34	47	18	43	48	23	31
Herbert, C., Alberton .....	49	26	52	50	25	41	51	25	74
Holmes, F. A., Naracoorte .....	52	22	32	53	22	29	54	23	44

EGG-LAYING COMPETITION—*continued.*

Row No.	Name and Address.	Bird No.	Month ending 30/9/20.	Score to Date.	Bird No.	Month ending 30/9/20.	Score to Date.	Bird No.	Month ending 30/9/20.	Score to Date.
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WHITE LEGHORNS—*continued.*

B	Green, F. W. H., Monteith .....	55	19	40	56	22	80	57	23	7
B	Herbert, C., Alberton .....	58	24	34	59	21	28	60	24	31
B	Urtwin, A. P., Balaklava .....	61	18	56	62	21	34	63	22	41
B	Purvis, W., Glanville Blocks .....	64	21	33	65	25	71	66	23	32
C	Green, F. W. H., Monteith .....	1	19	42	2	19	57	3	22	9
C	Holmes, F. A., Naracoorte .....	4	21	33	5	22	25	6	25	30
C	Axtell, Mrs. J., Glen Osmond .....	7	19	40	8	22	50	9	21	43
C	Finn, H. J., jun., Angaston .....	10	20	26	11	17	29	12	22	33
C	Coleman, A. C., Grange .....	13	21	34	14	21	61	15	21	25
C	Green, F. W. H., Monteith .....	16	22	79	17	23	77	18	20	67
C	Anderson, J., Prospect .....	19	23	47	20	17	19	21	22	28
C	Axtell, Mrs. J., Glen Osmond .....	22	20	40	23	21	37	24	20	4

## TWO WHITE LEGHORNS, ONE ANCONA.

C	Tester, Geo. P., Naracoorte .....	25	22	44	26	22	86	27	22	40
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## SECTION 2.—HEAVY BREEDS (SINGLE TESTING). THREE PULLETS IN EACH ENTRY.

## BLACK ORPINGTONS.

C	Lawson, E. A., Camberwell, Victoria .....	28	5	22	29	25	34	30	15	34
C	Bertelsmeier, C. B., Kensington ..	31	8	94	32	23	58	33	23	79
C	Shaw, R. R., Crystal Brook .....	34	21	62	35	20	45	36	26	38
C	Jarman, T. E., Epping, N.S.W. ..	37	14	15	38	19	19	39	22	26
C	Hogg, R. J., Morphett Vale .....	40	23	26	41	24	43	42	14	74
C	Shaw, R. R., Crystal Brook .....	43	24	52	44	21	30	45	15	18
C	Holmes, F. A., Naracoorte .....	46	23	35	47	21	26	48	12	42
C	Buttfield, C. C., Crystal Brook ..	49	23	44	50	19	25	51	24	53
C	Shevill, W. A., Beaumaris, Victoria ..	52	23	32	53	10	10	54	21	26
C	Eckermann, W. P., Eudunda .....	55	11	11	56	25	53	57	20	39
C	Lampert, Mrs. S., Piccadilly .....	58	24	66	59	23	35	60	23	26
C	Bansemmer, Mrs. B., Beaumont ..	61	20	57	62	22	65	63	16	66
C	Siebler, J. M., North Broken Hill ..	64	—	60	65	14	79	66	23	105
D	Holmes, F. A., Naracoorte .....	1	26	103	2	Dead	3	14	65	
D	Purvis, W., Glanville Blocks .....	4	29	47	5	Dead	6	24	33	
D	Bertelsmeier, C. B., Kensington ..	7	27	89	8	25	47	9	28	36
D	Tester, G. P., Naracoorte .....	10	17	36	11	13	29	12	27	33
D	Kalms, A. G., Neale's Flat .....	13	—	4	14	22	41	15	20	55

## RHODE ISLAND REDS.

D	Stacey, R. S., Hamley Bridge ..	18	21	27	17	22	26	18	22	30
D	Stockman, A., Goodwood .....	19	22	65	20	18	57	21	14	67

## RHODE ISLAND WHITES.

D	Bansemmer, Mrs. B., Beaumont ..	22	26	29	23	25	25	24	30	39
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## SECTION 3.—LIGHT BREEDS (PEN TEST). SIX PULLETS IN EACH PEN.

Pen No.	Name and Address.	Breed.	Eggs Laid for Month Ending 30/9/20.	Total Eggs Laid from 1/4/20 to 30/9/20.
1	Hodges, F., Ballarat North, Victoria	White Leghorns	142	516
2	Bertelsmeier, C. B., Kensington	"	109	400
3	Beythien, E. W., Scott's Creek	"	128	268
4	McDonnell, G., Auburn, Victoria	"	134	408
5	Bertelsmeier, C. B., Kensington	"	124	382
6	Thompson, E. F., Franklin	"	134	399
7	Purvis, W., Glanville Blocks	"	121	411
8	Smith & Gwynne, Gawler South	"	144	332
9	Anderson, S., Gawler Railway	"	146	502
10	Eckermann, W. P., Eudunda	"	118	352
11	Beythien, E. W., Scott's Creek	"	129	312
12	George, R., New Queenstown	"	133	479
13	Deacon, J. R., Solomontown	"	124	423
14	Alford, Thos., Broken Hill	"	133	532
15	Evans, H. A., Richmond	"	123	584
16	Connor, D. C., Gawler	"	122	345
17	Raymoor Poultry Farm, Kilkenny Blocks	"	143	450
18	Lampert, Mrs. S., Piccadilly	"	103	283
19	Pool, F. J., North Norwood	"	120	257
20	Woodhead, N., Torrensville	"	126	320
21	Thompson, E. F., Franklin	"	131	287
22	Randall, J., Bowden	"	98	195
23	Earle, E., Solomontown	"	136	426
24	Willington, Mrs. G., Milang	"	120	339
25	Vercoe, Wm., Sefton Park	"	108	475
26	Pugsley, A., Hindmarsh	"	88	276
27	Howie, H. H., Mount Gambier	"	110	374
28	Purvis, W., Glanville Blocks	"	101	320
29	Anderson, W., Kapunda	"	94	265
31	Eldridge, J. H., Norwood	"	112	388
32	Pope Bros. & Co., Hectorville	"	95	267
33	Oakey, E., Mannahill	Brown Leghorns	109	265

## SECTION 4.—HEAVY BREEDS (PEN TEST). SIX PULLETS EACH ENTRY.

34	Hogg, R. J., Morphet Vale	Black Orpingtons	89	286
35	Bertelsmeier, C. B., Kensington	"	87	436
36	Eckermann, W. P., Eudunda	"	89	378
37	Lampert, Mrs. S., Piccadilly	"	97	370
38	Bertelsmeier, C. B., Kensington	"	48	348
39	Bansemmer, Mrs. B., Beaumont	"	99	263
40	Purvis, W., Glanville Blocks	"	111	376
41	Siebler, J. M., North Broken Hill	"	76	414
42	Bertelsmeier, C. J., Kensington	"	114	541
43	Purvis, W., Glanville Blocks	"	87	403
44	Frost, F. W., Wallaroo	Barred Rocks	79	173
45	Lampert, Mrs. S., Piccadilly	Black Orpingtons	101	536

## RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of September, 1920, also the average precipitation to end of September, and the average annual rainfall.

Station.	For Sept., 1920.	To end Sept., 1920.	Av'ge. to end Sept.	Av'ge. Annual Rainfall	Station.	For Sept., 1920.	To end Sept., 1920.	Av'ge. to end Sept.	Av'ge. Annual Rainfall
FAIR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
Oodnadatta .....	0.29	5.90	3.71	4.73	Spalding .....	2.56	17.25	15.82	18
Marree .....	0.46	8.69	4.53	6.02	Gulnare .....	3.54	17.73	14.83	17
Farina .....	0.49	7.30	5.08	6.67	Yacka .....	2.51	13.43	12.23	16
Copley .....	0.71	8.41	6.53	8.30	Koolunga .....	1.87	12.65	12.57	15
Beltana .....	0.81	7.54	6.94	8.93	Snowtown .....	1.56	12.76	12.88	14
Blinman .....	1.12	11.03	9.95	12.52	Brinkworth .....	2.22	14.64	12.75	13
Tarcoola .....	2.40	10.42	5.48	7.33	Blyth .....	1.96	15.02	13.39	12
Hookina .....	3.32	16.15	9.72	12.65	Clare .....	3.47	22.75	19.70	11
Hawker .....	3.43	16.42	9.76	12.37	Mintaro .....	2.77	22.77	18.70	10
Wilson .....	3.14	17.49	9.36	11.85	Watervale .....	3.20	23.07	22.30	9
Gordon .....	2.95	12.62	8.15	10.43	Auburn .....	2.59	19.71	13.07	8
Quorn .....	4.51	15.66	10.94	13.79	Hoyleton .....	1.40	12.89	14.17	7
Port Augusta .....	3.25	11.01	7.31	9.42	Balakiava .....	1.74	12.66	12.87	6
Port Augusta West .....	3.36	11.13	7.29	9.36	Port Wakefield .....	1.28	11.48	10.71	5
Bruce .....	3.43	11.65	8.72	9.99	Terowie .....	1.98	9.03	10.42	4
Hammond .....	3.65	13.04	8.80	11.36	Yarcowie .....	2.28	10.11	10.99	3
Wilmington .....	4.42	17.19	13.45	18.06	Hallett .....	2.15	13.30	12.78	2
Willowie .....	3.41	12.01	8.87	11.82	Mount Bryan .....	2.20	13.46	13.07	1
Melrose .....	4.66	21.32	18.62	23.11	Burra .....	2.28	15.00	14.26	0
Bookeroo Centre .....	2.69	12.42	12.21	15.51	Farrell's Flat .....	2.19	15.65	15.23	0
Port Germein .....	1.20	10.14	9.93	12.65	WEST OF MURRAY RANGE.				
Wirrabara .....	4.17	20.42	15.60	19.44	Manoora .....	2.46	16.76	14.88	18
Appila .....	2.64	12.29	10.53	14.90	Saddleworth .....	2.00	14.96	14.81	17
Cradoek .....	3.26	14.66	8.79	10.82	Marrabel .....	2.23	17.23	14.64	16
Carrieton .....	4.18	14.69	9.60	12.34	Riverton .....	1.75	14.92	16.63	15
Johnburg .....	3.49	11.92	7.87	10.22	Tardee .....	1.90	12.11	14.13	14
Eurelia .....	3.60	13.47	10.31	13.11	Stockport .....	2.07	12.96	12.89	13
Orronoo .....	2.76	12.60	10.47	13.42	Hamley Bridge .....	1.73	12.00	13.07	12
Nackara .....	4.00	12.27	8.56	10.63	Kapunda .....	1.60	11.39	14.93	11
Black Rock .....	3.09	13.43	9.55	12.29	Freeling .....	1.83	12.28	14.25	10
Ucolta .....	2.18	9.68	9.19	11.65	Greenock .....	1.86	15.05	17.26	9
Peterborough .....	2.70	11.30	10.28	13.28	Truro .....	2.02	14.05	16.21	8
Yongala .....	2.71	13.46	11.02	14.13	Stockwell .....	1.86	13.76	16.24	7
LOWER NORTH-EAST.					Nuriootpa .....	2.03	14.93	16.89	6
Yunta .....	2.53	9.71	6.39	8.40	Angaston .....	2.65	17.63	18.14	5
Waukaringa .....	1.78	9.22	6.03	8.15	Tanunda .....	2.50	16.83	18.03	4
Mannahill .....	1.43	6.42	6.20	8.51	Lyndoch .....	3.48	21.96	18.49	3
Cockburn .....	2.72	8.31	6.12	8.03	Williamstown .....	2.69	21.60	22.76	2
Broken Hill, NSW.	2.53	7.52	7.48	9.89	ADELAIDE PLAINS.				
LOWER NORTH.					Mallala .....	1.59	12.84	13.31	18
Port Pirie .....	1.82	11.01	10.50	13.26	Roseworthy .....	1.41	13.59	13.84	17
Port Broughton .....	2.11	13.04	11.41	14.13	Cawler .....	1.83	15.77	15.45	16
Bute .....	1.66	14.33	12.68	15.55	Two Wells .....	1.71	12.29	12.84	15
Laura .....	3.13	17.04	14.69	18.12	Virginia .....	2.13	14.82	13.96	14
Caltowie .....	3.00	13.69	13.31	17.02	Smithfield .....	2.25	14.48	13.52	13
Jamestown .....	3.46	17.44	12.89	17.56	Salisbury .....	1.30	13.54	15.03	12
Bundaleer W. Wks.	3.03	17.06	13.71	17.56	North Adelaide .....	1.81	21.70	17.87	11
Gladstone .....	2.43	14.59	12.56	16.05	Adelaide .....	1.51	19.41	17.13	10
Crystal Brook .....	2.83	15.34	12.23	15.62	Glenelg .....	0.99	14.98	15.10	9
Georgetown .....	3.22	17.79	14.61	18.30	Brighton .....	1.26	19.17	17.42	8
Narriby .....	2.06	12.63	13.15	16.43	Mitoham .....	1.82	24.43	19.51	7
Redhill .....	2.22	14.73	13.48	16.66	Glen Osmond .....	1.63	22.68	21.14	6
					Magill .....	1.36	20.72	20.84	5

## RAINFALL—continued.

Station.	For Sept., 1920.	To end Sept., 1920.	Av'ge. to end Sept.	Av'ge. Annual Rainfall	Station.	For Sept., 1920.	To end Sept., 1920.	Av'ge. to end Sept.	Av'ge. Annual Rainfall
<b>MOUNT LOFTY RANGES.</b>					<b>WEST OF SPENCER'S GULF—continued.</b>				
Free Gully.....	2-28	23-25	22-67	27-73	Cummins.....	2-10	17-26	—	—
Long West.....	3-87	39-28	38-95	46-82	Port Lincoln.....	2-14	18-22	16-82	19-83
Fla.....	3-32	32-92	37-20	44-49	Tumby.....	2-22	12-87	11-80	14-76
London.....	2-28	26-02	27-42	33-18	Carrow.....	2-54	9-89	11-38	15-14
Shett Vale.....	1-24	17-75	18-44	22-00	Arno Bay.....	2-42	9-16	10-52	13-10
Hunga.....	1-77	18-46	17-81	20-21	Cleve.....	2-73	—	—	—
Hunga.....	1-69	24-40	21-52	25-82	Cowell.....	1-60	7-17	9-21	11-56
Hunga.....	1-17	17-86	16-80	20-22	Point Lowly.....	1-83	7-84	9-01	11-84
Hunga.....	2-27	25-82	—	—					
Hunga.....	1-59	18-93	17-16	20-53	<b>YORK PENINSULA.</b>				
Hunga.....	1-73	21-96	20-02	22-93	Walleroo.....	1-09	11-85	11-62	14-11
Hunga.....	3-43	25-00	22-32	27-01	Kadina.....	1-51	15-38	13-26	15-93
Hunga.....	2-62	22-85	24-28	29-43	Moonta.....	1-40	12-48	12-62	15-31
Hunga.....	3-13	28-07	27-15	33-33	Green's Plains.....	1-47	13-42	12-93	15-75
Hunga.....	3-36	—	—	—	Maitland.....	1-51	15-47	16-68	20-20
Hunga.....	3-97	30-55	29-70	35-60	Androssan.....	1-12	11-01	11-42	13-96
Hunga.....	3-02	28-87	26-63	32-05	Port Victoria.....	1-60	12-63	12-69	15-34
Hunga.....	2-38	27-49	28-75	34-81	Curramulka.....	1-31	13-33	15-13	18-31
Hunga.....	2-60	21-51	23-20	28-58	Minlaton.....	1-50	16-49	14-80	17-70
Hunga.....	3-03	26-92	25-67	31-10	Brentwood.....	1-13	13-84	12-58	15-44
Hunga.....	2-54	29-23	—	32-94	Stansbury.....	1-20	12-68	14-14	17-08
Hunga.....	3-02	24-78	24-42	30-60	Warooka.....	1-44	13-55	15-01	17-74
Hunga.....	3-07	28-27	28-65	36-26	Yorketown.....	1-38	14-81	14-37	17-29
Hunga.....	1-49	14-78	15-76	19-23	Edithburgh.....	1-37	12-96	13-73	16-58
<b>MURRAY FLATS AND VALLEY.</b>					<b>SOUTH AND SOUTH-EAST.</b>				
Hunga.....	1-73	12-69	15-35	18-77	Cape Borda.....	1-79	27-96	21-57	24-96
Hunga.....	1-33	10-47	12-65	15-56	Kingscote.....	2-54	25-88	15-95	18-97
Hunga.....	1-80	10-68	11-53	14-59	Penneshaw.....	2-92	18-50	18-11	21-34
Hunga.....	1-61	9-20	10-79	14-82	Victor Harbor.....	1-43	17-23	17-70	21-56
Hunga.....	1-30	9-89	11-07	14-55	Port Elliot.....	1-37	17-03	16-59	20-00
Hunga.....	1-65	8-61	10-97	13-98	Goolwa.....	1-51	12-48	14-64	17-87
Hunga.....	1-67	10-08	12-47	15-45	Mindarie.....	—	—	—	—
Hunga.....	1-66	7-92	9-25	11-51	Karoonda.....	5-73	—	—	—
Hunga.....	2-61	12-67	12-14	15-23	Pinnaroo.....	3-35	11-89	12-93	15-57
Hunga.....	2-60	10-67	9-54	12-07	Parilla.....	3-92	14-03	10-66	14-02
Hunga.....	2-11	7-96	8-23	10-80	Lameroo.....	3-40	13-31	12-63	16-45
Hunga.....	1-35	5-61	7-84	10-26	Parrakie.....	2-56	12-93	11-05	14-42
Hunga.....	2-46	12-41	13-79	17-51	Geranium.....	2-89	14-11	12-39	16-24
Hunga.....	1-64	7-50	8-35	10-90	Peake.....	2-38	13-02	12-60	16-25
Hunga.....	1-64	6-80	6-75	9-13	Cooke's Plains.....	1-34	10-00	11-85	15-00
Hunga.....	1-45	8-01	6-87	9-41	Coomandook.....	1-96	11-89	13-91	17-75
Hunga.....	1-87	6-87	8-31	11-11	Coonalpyn.....	2-17	11-81	13-97	17-64
Hunga.....	2-46	11-21	9-51	12-27	Tintinara.....	1-86	13-86	13-73	18-83
Hunga.....	1-87	8-84	8-92	10-92	Keith.....	1-80	14-16	14-46	18-54
<b>WEST OF SPENCER'S GULF.</b>					Bordertown.....	1-80	15-31	15-32	19-52
Hunga.....	1-40	6-57	8-82	10-03	Wolsley.....	1-73	15-61	14-23	18-07
Hunga.....	1-61	6-23	7-15	9-24	Frances.....	1-69	13-26	15-57	20-10
Hunga.....	2-12	13-98	10-34	12-11	Naracoorte.....	2-38	18-97	20-17	22-53
Hunga.....	1-95	10-90	10-35	12-26	Penola.....	2-31	21-86	21-12	26-48
Hunga.....	1-48	8-23	8-22	10-47	Lucindale.....	2-09	21-27	18-70	22-93
Hunga.....	1-81	11-64	8-26	10-37	Kingston.....	1-61	20-99	20-35	24-51
Hunga.....	2-29	13-95	10-59	12-97	Robe.....	2-21	26-09	20-73	24-60
Hunga.....	1-99	18-68	12-43	15-09	Beachport.....	1-84	27-23	23-03	27-29
Hunga.....	2-43	16-36	12-83	15-35	Millicent.....	2-33	31-19	24-45	29-29
Hunga.....	2-35	22-84	12-95	16-37	Kalangadoo.....	2-77	28-87	—	—
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## AGRICULTURAL BUREAU REPORTS.

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Angaston .....	•	—	—	Gladstone .....	†	23	20
Appila-Yarrowie .....	•	—	—	Glencoe .....	275	21	18
Arthurlton .....	•	—	—	Glossop .....	•	—	—
Ashbourne .....	†	25	29	Goode .....	•	27	24
Baiallava .....	•	9	13	Green Patch .....	264	25	—
Beetaloo Valley .....	254	20	—	Gumeracha .....	•	25	—
Belalie North .....	•	23	20	Halidon .....	•	—	—
Berri .....	272	27	24	Hartley .....	•	—	3
Big Swamp .....	•	14	25	Hawker .....	•	26	23
Blackheath .....	272	23	20	Hilltown .....	•	—	—
Blackwood .....	•	18	15	Hookina .....	252	21	25
Blyth .....	255	—	—	Inman Valley .....	•	28	25
Booleroo Centre .....	†	22	26	Ironbank .....	274	23	20
Borrika .....	272	23	—	Julia .....	•	—	—
Bowhill .....	•	—	—	Kadina .....	†	—	—
Brentwood .....	•	21	25	Kalangadoo .....	•	9	13
Brinkley .....	272	23	20	Kanmantoo .....	•	23	20
Bundaleer Springs .....	•	25	—	Keith .....	•	—	—
Burra .....	•	—	—	Ki Ki .....	•	—	—
Bute .....	262	26	23	Kilkerran .....	†	21	—
Butler .....	•	—	—	Kimba .....	268	—	—
Caltowie .....	•	—	—	Kingscote .....	•	—	—
Canowie Belt .....	•	—	—	Kingston-on-Murray .....	†	—	—
Carrow .....	•	21	25	Kongorong .....	276	28	25
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Clanfield .....	•	—	—	Koppio .....	265	25	22
Clare .....	259	5	2	Kybybolite .....	†	21	25
Clarendon .....	272	25	22	Lake Wangary .....	268	23	20
Claypan Bore .....	268	27	24	Lameroo .....	•	—	—
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Craddock .....	•	—	—	Lucindale .....	†	—	—
Crystal Brook .....	256	23	20	Lyndoch .....	†	21	25
Cummins .....	•	30	27	MacGillivray .....	†	20	24
Cygnat River .....	†	21	25	Maitland .....	†	2	6
Dawson .....	•	—	—	Mallala .....	•	4	1
Denial Bay .....	•	—	—	Mangalo .....	•	—	—
Dowlingville .....	•	—	—	Mantung .....	•	—	—
Edillilie .....	268	30	27	Meadows .....	•	27	—
Elbow Hill .....	264	30	27	Meningie .....	•	—	—
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Freeling .....	•	—	—				

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Miltalie .....	266	23	20	Redhill .....	259	5	—
Mindarie .....	*	4	1	Renmark .....	*	—	—
Minlaton .....	*	22	26	Riverton .....	*	—	—
Minnipa .....	268	—	—	Riverton (Women's) .....	*	—	—
Mintaro .....	256	23	20	Roberts and Verran .....	266	25	22
Mitchell .....	*	—	—	Rosedale .....	*	—	—
Monarto South .....	271	23	20	Rosy Pine .....	272	—	—
Moonta .....	†	23	20	Saddleworth .....	*	—	—
Moorsk .....	276	—	—	Saddleworth (Women's) .....	262	—	—
Moorlands .....	*	—	—	Salisbury .....	262	5	2
Moorook .....	*	—	—	Salt Creek .....	267	23	20
Morchard .....	†	23	20	Sandalwood .....	†	—	—
Morgan .....	*	—	—	Sherlock .....	†	—	—
Morpheh Vale .....	275	28	25	Shoal Bay .....	*	21	25
Mount Barker .....	275	27	24	Smoky Bay .....	267-8	—	—
Mount Bryan .....	*	—	—	Spalding .....	*	—	—
Mount Bryan East .....	258	—	—	Stockport .....	*	—	—
Mount Compass .....	*	—	—	Strathalbyn .....	*	26	23
Mount Gambier .....	276	9	13	Talia .....	*	11	8
Mount Hope .....	266	23	20	Tantanoola .....	†	—	—
Mount Pleasant .....	†	8	12	Taplan .....	*	20	—
Mount Remarkable .....	*	—	—	Tarcowie .....	254	26	23
Mundalla .....	*	20	24	Tatiara .....	*	16	20
Mundoora .....	258	25	29	Two Wells .....	*	—	—
Murray Bridge .....	*	19	16	Uraidla and Summert'n .....	274	4	1
Mypolonga .....	272	27	24	Veitch .....	*	—	—
Myponga .....	*	—	—	Waikerie .....	†	—	—
Nantawarra .....	*	21	25	Wall .....	*	—	—
Naracoorte .....	278	9	—	Wanhi .....	*	—	—
Narriby .....	*	9	13	Warcovie .....	†	27	—
Narrung .....	*	30	27	Warrow .....	*	—	—
Netherton .....	272	3	20	Watervale .....	†	—	—
New Residence .....	*	—	—	Wepowie .....	*	23	20
North Boohorowie .....	*	—	—	Whyte-Yarcowie .....	†	—	—
North Bundaleer .....	*	—	—	Wilkawatt .....	272	23	20
Northfield .....	*	13	10	Willowie .....	254	27	24
Nunkeri and Yurgo .....	*	3	7	Wilmington .....	254	27	24
O'Loughlin .....	266	27	24	Wirrabara .....	258	23	27
Orroroo .....	252	—	—	Wirrega .....	*	—	—
Parilla .....	*	—	—	Wolowa .....	*	—	—
Parilla Well .....	*	25	—	Woodleigh .....	*	—	—
Parrakie .....	272	—	—	Woodside .....	*	23	20
Paruna .....	272	—	—	Wudinna .....	†	—	—
Paskeville .....	*	26	23	Wynarka .....	†	—	—
Penola .....	†	2	6	Yabmana .....	*	—	—
Penong .....	*	30	27	Yacka .....	†	26	23
Petina .....	268	30	27	Yadnarie .....	267	27	24
Pine Forest .....	263	26	23	Yallunda .....	*	—	—
Pinnaroo .....	*	29	26	Yaninee .....	*	—	—
Pompoota .....	*	—	—	Yeelanna .....	268	23	20
Port Broughton .....	†	22	—	Yongala Vale .....	*	22	26
Port Elliot .....	†	16	20	Yorketown .....	*	—	—
Port Germein .....	258	2, 30	—	Younghusband .....	†	26	25
Port Pirie .....	†	23	20				

\* No report received during the month of September.

† Formal report only received.

‡ Held over until next month.

§ Report of annual meeting received.



## THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

### REPORTS OF BUREAU MEETINGS.

#### UPPER-NORTH DISTRICT.

##### (PETERBOROUGH AND NORTHWARD.)

AMYTON (Average annual rainfall, 11.82in.).

August 24th.—Present: seven members and visitors.

**WHEAT GROWING.**—In a paper dealing with this subject Mr. K. Gum said the preparation of land in those districts that were not favored with a good rainfall was one of the most important points in the successful growing of the wheat crop. Fallowing should be commenced as early as possible in order that the soil might receive the full benefit of the winter rains. During September and October the fallow should be cultivated, and after the sheep had been shorn they should be turned into the paddocks to eat the weeds. He would commence seeding in April, and sow 45lbs. of seed with 30lbs. of super to the acre. He maintained that for general purposes Federation was the best wheat for the district, with Gluyas as an early wheat and Yandilla King as a late variety. After the crop had been up for about a month or six weeks it should be cross harrowed. That, in his opinion, was a most necessary practice in their district, for it not only destroyed a large number of weeds, but also very materially assisted in conserving moisture. For harvesting the crop he preferred the harvester, because of the saving of labor that would be affected. In the discussion that followed Messrs. Crisp and Mills thought that 45lbs. of seed per acre was rather light, because one could not rely on all the seed germinating. Mr. Schulz thought it a good practice to turn the sheep on the land as soon as it was fallowed, and then cultivate the fallow just before harvest, as that left the surface of the fallow loose and prevented moisture evaporating.

HOOKINA (Average annual rainfall, 12in.).

August 26th.—Present: nine members and visitors.

**MANAGEMENT OF THE TEAM.**—In the course of a paper under the heading of "Teamstering," Mr. J. O'Connor said the first essential point in the management of the farm team for heavy carting work was the selection of a good staunch pair of leaders. The next best and strongest pair of horses should be worked on the points of the shafts, because the leaders were practically useless when the team was making a short turn. The teamster should not get excited if the horses got into a difficult position, and in the case of negotiating a very heavy pull he should not attempt to rush the team, but rather let them go just as slowly as they wished. In the discussion that followed, Mr. J. Carn favored the practice of starting the team with a whistle, rather than shouting out to them. It was a great advantage to have the leaders so educated that they would answer a command to work either to the near or off side. He believed the near side horse was the mainstay of the team. Mr. G. Hentschke did not agree with the previous speaker. He thought it was advisable to have the best horse on the off side, because one could easily keep a slow horse up to its work when driving from the near side.

ORRBOOO (Average annual rainfall, 13.12in.).

August 28th.—Present: eight members.

**WATER AND FODDER CONSERVATION.**—In a paper dealing with this subject, Mr. H. Matthews said that much of the water that was allowed to run to waste along

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Employer finds board and lodging in his home, or boards trainee out when not possible to take him into the home, or he may pay trainee 25s. per week and find quarters—trainee then provides for himself.

Employer pays 12s. 6d. per week, monthly, to the Minister, through this office. The Minister pays trainee 30s. per week, monthly.

Contract is made for 12 months between employer and Minister, terminable at any time by the employer should the trainee misconduct himself, or should the employer have any good reason for dismissal which could be indorsed by the Minister; failure of employer to keep his contract (incompetency or misconduct) enables trainee to terminate contract.

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the roads and gutters could be saved by excavating surface tanks in good holding country. Speaking of the conservation of fodder, the writer referred to the rank growth of clover and barley grass in many of the watercourses, and thought it could be cut and stacked in the same manner as one treated Inceerne. During the discussion that followed, Mr. Dennis spoke of the method of making silage by simply digging a hole in the ground and placing weights on the green fodder. Other members spoke, and all agreed that more advantage should be taken of the abundance of fodder and water during good seasons.

WILLOWIE (Average annual rainfall, 11.90in.).

August 31st.—Present: 10 members and visitors.

USE OF CONCRETE ON THE FARM.—Mr. S. G. McCallum, who contributed a short paper dealing with this subject, said that the heavy increase in the price of timber and galvanized iron had made it impossible for many farmers to erect barns, chaff houses, tanks, and other necessary farm buildings, but he believed the difficulty could be surmounted by using reinforced concrete instead of iron. Overhead tanks were also being made with concrete, and in some places successful attempts had been made in the manufacture of concrete posts for fencing. The cost of the concrete was considerably lower and more durable than iron and timber, and the work when finished gave the buildings an appearance of stability.

TARCOWIE, August 24th.—Addresses on the "Co-operative Movement" were delivered by Messrs. Campbell and Hogan, and an interesting discussion followed.

WILMINGTON, August 25th.—The question of box-thorn destruction was brought before the meeting. Members were agreed that in the majority of cases the destruction of the plant was not effectively carried out, principally because the roots were not completely destroyed when the bushes were cut down.

## MIDDLE-NORTH DISTRICT.

(PETERBOROUGH TO FARRELL'S FLAT.)

BEETALOO VALLEY (Average annual rainfall, 18in. to 19in.).

August 25th.—Present: 12 members and five visitors.

VEGETABLE GROWING.—Mr. J. E. Bird contributed a paper on this subject. A level piece of ground with a good supply of water close at hand should, if possible, be selected. It should be well worked, and a supply of stable manure worked into it. For summer vegetables he would grow tomatoes, trombones, vegetable marrows, and watermelons. Tomatoes should be planted about July in beds. He advised making a frame about 1ft. deep the size of the bed required, and would fill it with fine stable or pigsty manure; he would then bank fresh stable manure around it to keep in the warmth. When the plants began to show they should be protected from frost. When planting out, the ground should be well manured and the rows spaced 3ft. apart with 2ft. between plants. He thought it was a good idea to make trenches and plant a row on each side; the water could then be run between them. Trombones, vegetable marrows, and watermelons could be planted in trenches about September. The seeds should be placed about 3ft. apart, two or three seeds being planted together in case one did not germinate. They would require plenty of water and manure. Early cabbages should be planted out with the first rains and kept well watered during the dry spells. They should be planted in rows 3ft. apart with about 18in. between plants. Onion seeds should be planted in February; they would then be ready to plant out with the first rains. Fairly loose soil was required, and they should be well worked and kept free from weeds. Turnips could be sown when the rains commenced. They could be sown broadcast or in drills, and would require plenty of manure and a loose soil. He preferred sowing them in drills, because they would be much easier to weed and thin out. Carrots could be sown as soon as the dry weather was over; they required a loose soil worked to a good depth to allow the roots to go down. It was not advisable to use freshly manured land because it made them throw out fibrous roots.

**VARIOUS BREEDS OF SHEEP.**—Mr. J. McIntosh then read a paper on this subject. The Shropshire, he said was a very hardy and useful sheep, a good doer, and would fatten quickly. He would not recommend it as a wool-grower, but when crossed with the Merino it would often produce a fleece of good strong wool of fair value. A few years ago it was thought that the Vermont breed, owing to the heavy black tip and the abundance of yolk, would supply a long-felt want in providing moisture to the fleece in the dry and parched districts of New South Wales and Queensland, but owing to its delicate nature and constitution and the objectionable wrinkly nature of the wool, that sheep had been discarded. The Lincoln sheep was a profitable animal, and would cross well with almost any other breed, and would fatten where many other breeds would starve. The wethers, if well cared for up to two-tooth, would often weigh up to 110lbs. when dressed. The ewes were fair breeders, and would produce from two to three lambs, and were noted for protecting their lambs from foxes. When crossed with the Leicester they would produce fat lambs for export, but where the fences were not in good order they would be difficult to keep within bounds. The Dorset Horn was a sheep that would fatten early, and grew a large frame, but was a poor wool-grower. As a breeder, owing to the large shoulders, losses were apt to occur at lambing time. As a profitable wool-grower, the pride of place should be given to the Merino. That sheep was strong and healthy, and was noted for the sweet mutton which it produced; but it was rather small and slow in coming to maturity, and would not fatten in comparison with many of the larger breeds. There were two points to note in keeping sheep on the farm—one was to keep them well fed, and the other to change them as often as possible in their various paddocks. The paddocks should be divided up into flocks of convenient size for cropping. Water should be provided if at all possible in each paddock. It was also necessary to prepare for lean seasons by cutting a few acres for hay or grain, which could be fed to the stock by placing troughs in the various runs, or, in extreme cases, where grain was fed, it could be run out on the clean ground, and the sheep would pick it up readily and thrive.

#### BLYTH.

August 28th.—Present: 13 members.

**HORSE-BREEDING.**—The following paper under the heading, "The Need for Pure Bred Sires for Horse-breeding Purposes," was contributed by the Hon. Secretary, Mr. A. Lyell McEwin, jun.:—"It appears to me that for this district, at all events, we are faced with the problem of introducing good sires, or else a serious depletion must take place amongst our farm horses. Owing, no doubt, to the trouble and worry of grooming and keeping an entire on the farm, individuals have resigned from this important matter of reproduction. The cost of a really good pedigreed animal has also prevented the average farmer from making the outlay, for it cannot be expected that any individual will lay out hard cash unless sufficient inducement offers to make his investment safe. The consequence is that we have to choose only between a commonplace sire or none at all. The value of good sires remains without contradiction, and the fact of getting a horse merely to produce foals is a wrong impression. Every animal is made up of distinct parts of both dam and sire, and though the features of the sire may not be plainly evident as those of the dam, I believe that in breeding the constant use of good sires will give more effective breeding on an ordinary mare than a poor sire with a good mare. If prepotency is strong on the sire's side it must follow that those tendencies will be transmitted to the progeny; but it is not the points of breeding I wish to emphasize so much as the need for a scheme to introduce sires into our midst, the absence of which we all realize at present. The need, I am sure, is acknowledged by all, but it is in the means of bringing the sires where we are faced with a dilemma. I can but offer two alternatives, but I leave the meeting to formulate, or I should say endeavor to form, a sound and practical scheme whereby all difficulties could be overcome. Could not a district breeding club be formed to stimulate the interest in producing the best animal possible. If so, then I think the individual would step forward readily to purchase the right kind of sire. Failing that an animal could be selected and purchased by the club and worked upon the increasing popular scheme of co-operation. A groom could be kept, or the horse taken by some member on commission. Under this scheme, a correct record could be kept

of all mares, foals, and pedigrees from year to year; and I feel sure that in a short period we would find a superior class of horse on our farms and a keener competition at our agricultural shows."

#### CRYSTAL BROOK (Average annual rainfall, 15.62in.).

August 21st.—Present: 15 members.

**MERINO BREEDING AND CLASSING.**—To class Merinos properly, required a degree of skill which nothing but extensive practical experience could confer, said Mr. H. Dridan in a paper on this subject. However, if the sheep owner did not have an opportunity of getting his sheep classed by an expert he would be enabled, by observing the instructions, to throw out from his flocks such sheep as were palpably bad. Sheep of the following description could safely be rejected:—(1) Short-stapled, hard-woolled sheep; (2) sheep that stripped at the points and lost the belly wool, having a clean head without topknot; (3) any that had black or yellow spots on the legs and face; (4) sheep that were unusually small; (5) any that appeared thin and constitutionally feeble; (6) sheep with thin and light wool; (7) those which had short white hairs on the face, under the arms, and on the inside of the thighs; (8) any with coarse wool about the breech and tail; (9) those with long hairs appearing on the surface of the fleece; (10) any sheep whose wool, at shearing time, was less than 1in. long on the ribs and wither; (11) any long-legged and small-bodied sheep, and those dipped in at the back or otherwise mis-shapen. By attention to the above directions and culling defective animals out yearly, one would find that both the quality and quantity of the wool would improve rapidly. Fine wool was the fancy of some classers, while with others, the length of the staple was the main factor. A sheep should not be rejected because the wool did not appear to be up to the classer's standard if the other qualities were satisfactory. Fineness was a weighty consideration in the western districts of Victoria, and many imperfect sheep were retained because they possessed that distinction. Quantity, or yield per head, should be considered as well as quality. In this State more attention had been given to robust wools than in any other State. The yield per head was, in many cases, superior to that attained elsewhere. In regard to stud flocks, although the ewes were desirable in the matter of make and shape and wool, yet particular attention was necessary at the time of lambing to observe closely if any of the ewes were bad nurses, were deficient in milk supply, or had a tendency in a normal season to get out of condition while rearing the lamb. A sound constitutional ewe should rear a strong lamb and yield a good fleece at the same time. South Australian Merinos had long, straight backs. Tight horns were at one time regarded as denoting breeding. The curve of the horn should be short and regular. Much loss occurred to the farmers, station owners, and the State through keeping poor, mongrel sheep, whose progeny became worse each year. They should be fattened and sold to the butcher, and if that was done consistently they would soon have a far different class of sheep and greater wool yields on the farms. A good discussion followed the reading of the paper.

#### MINTARO.

August 28th.

**FARM GATES.**—In the course of a short paper dealing with this subject Mr. J. Walsh expressed a preference for a gate constructed with iron pipes and wire netting. The gate should be supported on a separate post, that had been sunk about 4ft. into the ground. Wire gates were very convenient when they were erected away from the homestead, because they could be made sufficiently wide to pass a large implement and team of horses through without any difficulty. The writer exhibited two handy appliances for fastening wire gates. Mr. Kelly, in opening the discussion, thought it best to hang the gate from the strainer post, because the extra post entailed too much work for the convenience of taking large machinery from one paddock to another. He favored double gates, each 12ft. wide, and fastened in the centre. Several other members spoke in accordance with the views expressed by the writer of the paper.



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THE LEADING SUMMER HAY GRASS.

Every farmer should have in a crop of this wonderful grass. It makes first-class Ensilage, and fine grazing, can be cut and fed green, and is unsurpassed for Hay of which UP TO EIGHT TONS are obtainable in one season. The very crop for dry, arid districts, as it is a remarkable Drought Resister.

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**WIRABARA (Average annual rainfall, 18.91in.).**

August 28th.—Present: 21 members and visitors.

**HAYMAKING.**—In the course of a paper under the title "Cutting, Stooking, and Stacking Hay," Mr. R. M. Obst said if one intended to feed long wheaten hay to the working horses it should be cut about 10 to 14 days after the plants were in bloom. His experience was that if the crop was cut when the grain was full sized, yet still in the milky stage, the hay would show a nice green color, provided it had been treated properly. Dealing with the question of cutting oats for hay, the speaker said many farmers advocated cutting the oats when the crop showed a blue tinge of color, but at that particular stage there was no sap in the straw, so he thought it advisable, if one wished to strengthen the wheaten chaff, to harvest the oats and mix them with the chaff. He was in favor of stooking that hay immediately after in the binder in round stooks containing about 25 sheaves, and leaving the hay in the paddock for two weeks to become seasoned. For building the stack he advised the following procedure:—"Place the first row of sheaves butts outwards; the next row the same, but with the end of the sheaf only coming to the band of the first sheaf laid down. This plan can be followed out until the centre of the stack is reached, working row-upon row, and keeping the middle fairly full until the walls are erected. To build the roof I prefer to place the butts of the first row outwards, just over the edge, then instead of placing the butts of the next row out, put the heads outwards up to the bands of the first row, thus giving the roof of the stack a better slope to carry the water away." The writer went on to say if the stacks were built on a stage, one could prevent mice from getting into the hay by placing kerosine tins on the staging; and in addition to that there would be no waste through the hay becoming mouldy. Finally the stack should be thatched with straw.



Maize Grown Under Irrigation at Laura.

**MOUNT BRYAN EAST, August 28th.**—Mr. G. Dare read a paper from the *Journal of Agriculture*, and a good discussion followed. The Hon. Secretary (Mr. J. Doyle) read the annual report, and the officers were elected for the ensuing year.

**MUNDOORA, August 30th.**—The meeting was devoted to a discussion on the subjects to be dealt with at the forthcoming Annual Bureau Congress. The question of the merits of the disc and share implements was also brought before the members.

**PORT GERMEIN, August 7th.**—Mr. J. Hackett read a paper on the "Destruction of Noxious Weeds," and an interesting discussion followed.

REDHILL, August 31st.—The meeting took the form of a debate on the Wheat Pool. Messrs. McAvaney and Crouch supported the scheme, whilst Messrs. Wheaton and Hays discussed the negative side of the question. An interesting discussion followed.

### LOWER-NORTH DISTRICT.

(ADELAIDE TO FARRELL'S FLAT.)

CLARE (Average annual rainfall, 24.30in.).

September 7th.—Present: 18 members.

**BREEDING AND FEEDING PIGS.**—The following paper was read by Mr. F. J. Knappstein:—We are occasionally reminded that the breeding of pigs in South Australia is a declining industry, and it may readily be admitted that it has not attained the proportions which its profitable nature would warrant. It is surprising why so many farmers neglect to keep pigs. Breeding sows are so cheaply provided for. The breeding of pigs is on a level with breeding horses, cattle, and sheep in so far as dominating principles are concerned. Pedigree sires are the foundations of symmetry, rigor, early maturing, and other qualities. It is generally considered that the sire determines the outward form and structure of the progeny, including legs, quality, and points, whilst the sow supplies the frame and internal organisations, such as digestive, breeding, and fattening qualities. Unless pigs are well cared for, suitably handled, properly fed, and improved blood introduced they rapidly deteriorate. The great charm of the pig's use on the farm, in the dairy, the orchard, and garden is its indispensable character in utilising a quantity of practically unmarketable produce. Apart from being scavengers, it is questionable if any domestic animal will give a quicker and more certain profit. The cardinal principle is the selection of animals. The boar occupies first place, viz., pedigree first, a good length and depth of body, wide, compact, and firmly set on short, straight legs of fine bone. A boar with wide shoulders, well filled up and set back, is noted for early maturity. The animal should be selected from a large litter, in which uniformity of markings, size, and vigor are prominent. Both testicles should be visible and evenly suspended. Keep the boar well nourished to avoid tardy growth, and keep him steadily increasing in size till full maturity. Boars mature fairly early in our warm climate, but they should not be allowed to go to stud till eight months old, and only be allowed about six sows for the next three months, after that 20 or 25 for the next 12 months. If he shows any signs of viciousness he should be marketed without delay. *The Sow.*—The selection of the sow, whether for stud purposes or baconers, demands keen judgment. When establishing your piggery it is best to get three or four yelts from litters that are noted for activity, vigor, even make, and great vitality. They should be compact, though roomy, with long quarters, broad loins, good girth, strong back slightly arched, and fine short legs, 12 or 14 teats, clear and distinct, well developed, and set equally apart. It is as well to reject sows that show a tendency to fatten quickly, because you cannot have a brood sow and a porker at the same time. One of the two will fail. Yelts should be at least 10 months old before being sent to the boar. If maternity be forced on the yelt under this age it may result in immature stock and a small litter. A yelt in our warm climate will show sexual heat at five months. Sexual heat lasts about three days, and will recur every 21 days. After the yelt is stinted it is unwise to provide food too easily obtainable, because she wants exercise. The aim is to keep the animal in a sturdy and healthy condition by forcing her daily to get enough exercise in search of food, such as in a small paddock planted with any of the well-known grasses. Never let the sow get too fat. Over-feeding is liable to induce premature farrowing. The gestation period is 112 days, or 16 weeks. This varies with some sows more or less. Yelts frequently farrow from 100 to 108 days. If the sows are deprived of nitrogenous food, such as is found in grass paddocks, during gestation, and are given an excess of starchy food they develop an unnatural appetite for blood and flesh, and the consequences are they will eat their young after farrowing. Around the sty a protection bar or batten should be permanently secured 7in. from the floor and 6in. from the wall. This is to protect the young suckers from being injured and overlain during the struggles of the mother. On no account let the young sow eat the afterbirth, as this is only



teaching her to eat flesh and blood, and the young will then suffer. Let the young sow rear all the litter if possible. The object is to develop all her maternal functions for future litters. The diet for the first week should be light, sloppy, palatable, and easily digested. Only give spare quantities at first, three times a day. Skim milk, barley, pollard, slops, and green food are useful. Avoid giving food that will cause constipation. The aim is to provide food that will produce milk, not fat and flesh. If the sow becomes constipated give her small doses of castor oil, or Epsom salts in a warm swill. The management of the suckers really commences when they are a week old. Exercise in the open air; running about in the sunlight has a marked benefit in keeping the young pigs thrifty. The stomach of the suckers is small, and in consequence they should be fed regularly. It is surprising in the 24 hours how many times they will suckle their mother. Weaning can be effected gradually on milk slop, throwing a few grains of maize or a number of peas about for them to pick up. They soon learn to eat grass and forage for themselves. When they are sufficiently grown, say from six to eight weeks, they should have acquired sufficient training and confidence to feed themselves completely at the troughs. They ought to be fed frequently. It is best to wean off the sturdiest and most robust first, and allow the weaklings to suckle the mother for another week or so. The sow will come on heat three or four days after farrowing. That is allowed to pass unless some unforeseen accident happens to the litter, and then she may be served. She would not come on again till after the litter is weaned, and then she can be mated again. *Breeds.*—The Berkshire is undoubtedly the most popular in Australia at the present time. This may be attributed to the high returns it provides for both bacon and pork, and owing to its great muscular power, vitality, and constitutional vigor, and its marked tendency to resist disease. As an all-round pig it properly occupies first place. The animal is well modelled, possesses plenty of length, deep flanks, good hams, well sprung ribs, and lays on flesh quickly. The character of the meat is sweet, fine texture, and well balanced proportions of lean and fat, which makes it a general favorite with butcher, curer, and consumer. The color to be looked for is black with white blaze on face, white feet, and white tip on tail. The temper and disposition of the Berkshires are invariably all that could be desired. They are quiet, docile, and intelligent, and when properly cared for only a very low fence is required. They do not attempt to jump or root. They breed well under proper conditions. The boars are prepotent, and readily impress the young pigs from crossbred or common sows. They are good grazers, and forage well for their food. As porkers the pigs are killed from 60lbs. to 90lbs, and baconers 120lbs. to 140lbs. When a pig reaches six months old the feeding beyond that costs more. Berkshires are excellent mothers, contented, sturdy, and clean in habit, good sucklers, and take great care of their pigs. They are fairly prolific, rearing from eight to twelve at a time. A special characteristic of the young Berkshire sucklers is their liveliness, strength, and thriftiness from time of birth until weaned. *Yorkshires.*—We have not had such lengthened experience with the white pigs in Australia, but it is safe to state that they are asserting a claim to attention among our pig breeders, which is certain, in the long run, to challenge the Berkshires for leading place amongst the breeds. So far our experience in this climate to all white pigs, large, middle, and small, being especially suited for sty fattening. They have a tendency to scald during the summer months when turned out to graze and forage for themselves. They do much better in sties or confined in small areas. When out of condition they look horrid, and compare unfavorably with the black breeds. They are not so hardy as the Berkshires. When sty-fed they lay on condition more quickly than any of the other breeds. I have known large Yorkshires to gain from 43lbs. to 45lbs. in a month. *Middle Yorkshire.*—This pig is a fine style of general purpose pig, and resembles in many qualities the Berkshire. It is noted for quickness of growth, early maturity, a good appetite, light offal, a great proportion of lean meat to fat, a hardy constitution, a good coat of hair, and less liability to scald, a good grazer; it feeds and fattens well at any age. The flesh is tasty and relishable. They are grazed and confined with ordinary fences. So good natured are the sows that they have been known to litter together in one sty. The sows have a good flow of milk, and are good mothers. *Tamworth.*—This animal is the most striking in color. Its unmistakable shape and long snout proclaim it a true representative of the original wild pig of Europe. Formerly the Tamworths attracted little

notice outside the few villages in which they were preserved. The demand for leaner bacon has been an urgent factor in bringing this breed into prominence. Their natural stamina, vigor, and hardihood, combined with the great delicacy, firmness, and succulence of the flesh for bacon commended them to the modern breeder. Where they have proved valuable also is in crossing with grade or common sows, and further imparting vigor, size, and prolificness to over-refined pure breeds. The progeny of such crosses produces an excellent quality of flesh at a low cost. The sows are good mothers and free sucklers. One feature is worthy of record in their favor, and that is their power to resist disease, as well as the facility with which they farrow, and the little trouble they have in rearing large litters. The young pigs are thrifty, very active, and soon learn to forage for themselves. Color.—Golden red hair on a flesh-colored skin, free from black. *Pastures*.—Lucerne.—Owing to its high protein contents lucerne is known to be one of the most suitable foods for giving vitality and strength to tendons, muscles, and nerves. It is a cheap and relishable fodder for pigs in all stages of growth. Peas cannot be grown in many parts of this State, but where they can be grown as green fodder either alone or with oats and barley form a forage that is highly relished by pigs. Clovers are always recognised as nutritious fodder plants owing to their high protein contents and palatable flavors. Where moisture is sufficient, with good soil and favorable climate, the perennial red clover may be successfully grown. Rape is closely related to the cabbage and turnip. Next to lucerne it affords the most nourishing, succulent, and relishable crop on which to graze pigs. *Cereals*.—The grains of all cereals are more or less suitable for pigs, and supply large quantities of nutriment in small bulk. In all cases cereals give better results when subjected to soaking from 18 to 24 hours. Whenever soaking is adopted it is well to remember not to feed too much, not more than the animal is likely to eat, as in our warm climate, if any be left in the trough for any length of time, fermentation sets in and renders this food unsuitable. Pollard.—This class of food is specially nutritious for pigs, and is used very largely in dairying districts,

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where it is fed with skim milk. *Recipes for Pickling.*—Clean rain water, 20galls.; fine dairy salt, 50lbs.; brown sugar, 5lbs.; saltpetre, 2lbs.; allspice, 4lb. Dissolve the salt and saltpetre and sugar in the water. Immerse the allspice tied up in a muslin bag. Boil for one hour, and skim off the frothy matter rising to the surface. Allow this solution to cool before filling the pickling tub. This is sufficient for 500lbs. of meat. The sides should be rubbed with salt for two days before being put in the pickle. It takes usually about three weeks. *Recipe for Dry Curing.*—Fine dairy salt, 50lbs.; brown sugar, 5lbs.; saltpetre, 2lbs. (finely ground), and mixed together. For the first three or four days this mixture should be rubbed in over the fleshy parts and around the bones and joints. Afterwards spread the mixture freely each day. The pieces should be stacked. Alternate the method of stacking, so that the one on top is at the bottom the following day. Time required, about 14 days, according to size." In answer to a question from Mr. Berridge, Mr. Knappstein said the best cross of pigs for porkers was the Berkshire-Yorkshire, and for baconers Berkshire-Large Black or Tamworth. A crossbred pig generally matured very quickly, much more so than the pure bred. Mr. Seales said that in his opinion crossbred pigs stood severe conditions better than the pure bred, but at the same time they took more food. Mr. Hicks was in favor of the pure-bred pigs, and said that they were better in every respect. Mr. Dux said that he had just sold six pigs which were five months old. When they were two months old he bought one ton of pollard and fed it to them, and when they were sold they weighed 130lbs. dressed.

#### LOÑE PINE.

August 24th.

FALLOWING.—Mr. E. R. Hentschke contributed a short paper on this subject. The object of fallowing, he said, was to conserve moisture for the seed and also to induce weeds to germinate during spring. To obtain the best results, fallowing should be commenced in June, or as soon after seeding as possible, and the land should be evenly ploughed with a four-furrow or five-furrow plough to a depth of about 4in. If the ploughing had been completed in August or September, and a good rain had fallen, it was advisable to harrow the land. The fallow should then be worked both ways with the cultivator during spring to destroy the weeds. It was a good plan to keep a flock of sheep on the fallow to prevent the weeds from going to seed. Care should be taken not to work the fallow when dry. Just before seeding the fallow should again be worked, but a much better result would be obtained if that were done after the first good rain in autumn. If the fallow was worked in the proper order, even though the rainfall had been light during the growing period of the crop, a good return would, in all probability, result. An interesting discussion followed the reading of the paper.

SADDLEWORTH (WOMEN'S), August 10th.—Mrs. Morecom contributed a paper entitled "Gardening," which was much appreciated.

SALISBURY, September 7.—The meeting was devoted to the discussion of several questions of local interest. Various matters relating to the Annual Bureau Congress were also brought forward for consideration.

### YORKE PENINSULA DISTRICT.

(TO BUTE.)

BUTE (Average annual rainfall, 15.42in.)

August 31st.

PLANTING, CARE, AND MANAGEMENT OF FRUIT TREES.—The Chairman (Mr. W. Buchanan) read the following paper:—"When the trees first arrive from the nursery they should be heeled in until ready for planting. To do this correctly first dig a trench about 1ft. deep, open the bundle of trees, adjust the roots, and cover them with fine soil. Then thoroughly drench the roots with water, and fill up the trench with soil. All the trees should be planted at the first opportunity, particularly any evergreens. Never allow the roots to become exposed to the sun, but keep them covered with a wet piece of bagging. If the trees are planted early in the season good growth should be made. The proper distances for planting

the various varieties are as follows:—Peaches, 15ft. to 20ft. each way; plums, 12ft. to 15ft.; pears, 25ft. to 30ft.; apples, 18ft. to 20ft.; apricots, 15ft. to 20ft.; grapes, 8ft. to 10ft.; figs, 12ft. to 15ft. To ensure success the land should be properly situated, well prepared, and securely fenced. The places that the trees are to occupy should be dug to a depth of at least 2ft., over a circle 3ft. in diameter. Well-rotted compost or two or three handfuls of bone manure will help the trees to become firmly established, but on no account should fresh manure be used. If fresh manure is applied it should be spread over the land three or four months prior to the preparation of the soil, and then ploughed in. When planting it is advisable for two men to work together. One should hold the tree in a perpendicular position while the other spreads the roots out in their natural position. The trees should not be planted too deeply, for all varieties give the best results if the crown roots are laid close to the surface. Particularly should that apply to orange trees. Each tree should then be watered as planted, to consolidate the soil around the roots. After planting is completed a mulch of straw or well-rotted manure should be placed around the tree to prevent the surface of the soil from cracking. Whenever the trees require watering they should be given a thorough soaking, rather than several small applications of water. Many trees require cutting back before planting. Peaches, plums, apricots, and almonds (if not more than one year old, this being the best age to transplant), should have every limb cut off, and cut back to about 18in. from the ground. The tree, if thus treated, has the appearance of a straight stick stuck in the ground. When the buds commence to throw out from the stem, rub off all but three or four at the top, allowing only that number to grow, and the trees will make a well-formed, shapely head the first season. If the trees seem to be making too much open growth the ends of the tender new growth can be pinched off. At two years old the tops of the trees and end branches can be cut off, leaving only a few buds on each branch. The trees should be trimmed in such a manner that the last bud that is left on each limb will be an outside bud. The young fig tree should be pruned both ends and the mass of fibrous roots within a few inches of the main root removed; finally, the whole of the top of the tree should be cut off. The pruned root will throw up a shoot which will make wonderful growth. Oranges, lemons, and olives should have a large portion of their leaves removed, and the branches shortened before transplanting. Vines should have all the tops cut off, leaving only three buds. Plant the vines and leave only two of the buds above ground. When these buds start rub off the weaker one, and allow only the stronger to grow. The second year cut back again, and leave only three buds above the ground. When these start rub off all but the strongest one, and train it to a stake. When about 3ft. high it should be pinched off at the top, and all suckers and branches rubbed off, leaving only the four top ones. Train these to a wire trellis, and cut back again the third year to within about 10in. of the main stem. This treatment can be continued as the vine advances in age. Cultivate between the young growing trees after using the plough, to deeply pulverise the soil, and use the harrows after every rain. If possible dig drains to allow all surface water to flow into the plot, having it so graded that each portion of the soil receives a thorough soaking. Do this as often as possible, and always cultivate after the flood waters have soaked into the plot."

PINE FOREST August 24th.—The monthly meeting of the Branch was held at the residence of Mr. A. H. Hewett, when the members discussed the resolutions to be brought before the forthcoming Congress in Adelaide.

## WESTERN DISTRICT.

### COLLIE.

July 31st.—Present: 11 members and one visitor.

Mr. P. C. Anderson delivered an interesting and instructive address on "The Management of the Shearing Shed," dealing with the yarding, draughting, shearing, tarring cuts, skirting and classing of fleeces, pressing and finally branding the bales ready for appraisalment.

PRODUCING EGGS FOR MARKET.—Mr. P. Rowen contributed a paper on this subject. He thought that marketing eggs was the best course to follow in that

district if one desired to make poultry pay. He preferred the White Leghorn pure-bred. If one started with grown birds it was important to see that their ages were within certain limits, in the case of the rooster, from 10 to 12 months and not over two years, the hen at least 12 months and as much under two years as possible. That would ensure one having a stud in the prime of life, and such birds would produce young of the same physical standard. The average farm was stocked with a variety of fowls, and it was desirable that they be kept until the new breed could take up the work of laying eggs. Roosters should not be allowed to run at large because they would cause trouble with the system of working that he advocated. Accommodation would be required for a varying number of stud birds, according to the extent one decided on as a beginning. For a cockerel and five hens one would require a shelter shed, preferably facing the east, in order to keep out the rough winds. The nests should be so placed in the shed that they would protect the eggs from the heat of the sun and dampness. He had found that for a shelter shed, good stiff red clay, well wetted and mixed with a quantity of straw, made a suitable wall, and if built in moulds and whitewashed it would have a very good appearance. He favored broomhush for roofing, because if straw had been used, netting would have to be placed over the top to keep it on. A shed as described above for six fowls should measure 12ft. x 8ft. with a netting scratching yard in front at least 12ft. x 40ft.; that was the minimum, a much larger yard would be advantageous. A similar shed of about the same size would also be required for the chickens. Plenty of clean drinking water, fine charcoal, and fresh ashes, should be provided at all times. In the morning he would feed grains whole or coarsely broken, and later in the day, a bran mash with a good quantity of green feed mixed with it, and in the evening grain could again be fed. Grain should always be scattered well, thus inducing the hens to scratch, and work off surplus fat. As much variety should be allowed in feeding as possible, including the waste from the table. Early hatched hens would provide early eggs for setting, and those of late season would provide late eggs. Under favorable conditions, White Leghorns would lay for practically 11 months of the year. An incubator was indispensable; without it one would be unable to hatch chickens at the most profitable time. He then emphasized the necessity for marketing no other than infertile eggs and exercising care in packing. A good discussion followed the reading of the paper.

#### ELBOW HILL (Average annual rainfall, 11in. to 12in.).

August 28th.—Present; seven members.

CLASSING SMALL CLIPS.—In a short paper dealing with this subject Mr. W. Cooper said that as a rule the clip of the average farmer could be separated into two classes. First of all the wools of the different breeds should be kept separate, and those, in their turn, should be classed into two lots; those fleeces that had a clean and bright appearance and, secondly, those that were dirty, short stapled, and dull. In the preparation of the clip the skirting was a most important part, and care should be taken to remove all stained pieces from the main fleece. Coarse, rough, black, and hairy fleeces should be kept separate. Crossbred wool should on no account be mixed with that of the pure bred animals. An interesting discussion followed. Mr. P. Wake emphasized the necessity for crutching the sheep before shearing. Several other members also spoke.

#### GREEN PATCH (Average annual rainfall, 26.56in.)

August 23rd.—Present: 11 members and one visitor.

CARE OF HORSES ON THE FARM.—Mr. Schwardt contributed a short paper on this subject. Every care and attention, he said, should be given to the team, because the farmer was dependent on their services. A warm stable, built preferably on rising ground, was a necessity, and each horse should have its own stall. Regular feeding hours should be kept, and good hay chaff given three times a day. For the last feed at night he would advise giving a little long hay. Every teamster should know the amount of feed that was required by each horse after working it for a few days. Horses should be fed early in the morning and be allowed at least two hours before going to work. They should not be made to

work for a full day immediately after they had been brought in from a spell. Every horse should be provided with a good fitting collar, and provided it was kept in good condition, it should not be troubled with sore shoulders. Good bedding was essential to make them comfortable, and they should not be worked after sundown if it could be avoided. A good discussion followed the reading of the paper.

KOPPIO (Average annual rainfall, 22.40in.).

August 23rd.

FALLOWING.—A member contributed a paper under the heading "Fallowing Under Local Conditions." The writer was of the opinion that every effort should be made to commence fallowing as soon after seeding as possible. He favored a fairly heavy plough for the work, and preferred one with a spring release, because it was not so severe on the horses' shoulders, and one was able to secure a more uniform draught. One could not say definitely what depth the land should be ploughed, because the character of the land varied to such an extent; but for all general purposes he thought the land could be worked as follows:—From 4in. to 5in. in the heavy land, about 2½in. in those places where the depth of soil was shallow, and about 3½in. on the sandy soil. He maintained that the fallow should be worked through the spring and summer months with a good, heavy cultivator. The harrows were a very important implement, and should be run over the land after each shower of rain to conserve the moisture. An interesting discussion followed.

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**MILTALIE (Average annual rainfall, 14.55in.).**

July 29th.—Present: 7 members and 10 visitors.

**HOMESTEAD MEETING.**—The annual meeting of the Branch was held at the homestead of Mr. H. R. Jacobs, when members made an inspection of the buildings, garden, stock, &c. A planting demonstration caused a great deal of discussion, members agreeing that it was not wise to sink holes for trees more than to a depth of 2ft., especially where the subsoil was stiff and badly drained. A pruning demonstration was then carried out to illustrate the need for heavy pruning and thinning of fruit spurs on heavy bearing trees in order to keep the tree in a vigorous state and so prevent a stunted tree resulting. Californian paper-shell almond scions were also grafted on to seedling almonds to demonstrate the method. In the evening, after the business had been completed, the meeting took the form of a social gathering, about 40 members and visitors being present.

**MOUNT HOPE.**

August 28th.—Present: eight members.

**FARM BUILDINGS.**—The monthly meeting of the Branch was held at Mr. F. Myers' homestead, and the garden, stock, and crops were inspected. A paper on the subject of "Farm Buildings" was contributed by Mr. Myers. The writer expressed the opinion that the average man who took up new land was not in a position at first to build substantial farm sheds, but as soon as possible good serviceable structures should be erected. The chaff shed and stables were the most important of the farm buildings, and these should be commenced at the first opportunity, and completed as soon as possible. The shed should only be used for the storage of chaff, and the cutter be placed in a receiving shed on one side of the main shed, with elevators to convey the chaff into it. The engine or horseworks should be placed in a convenient position to the cutter. If an engine was used it should be inclosed in a small well-lighted shed. The stables could be erected on the other side of the chaff house, and would thus facilitate the feeding of the horses. The shed for housing the implements could be made adjoining the stables. The blacksmith's shop, barn, and men's room should be at some distance from the other buildings. The barn should be large enough to hold all perishable goods, and be strongly advised making the building mouseproof. A harness shed built near the stables would also be a great convenience. In the discussion that followed Mr. J. Sampson thought it best to erect the stables separate from the other farm buildings. Mr. R. L. Myers was of the opinion that the site for the stables should be governed by the contour of the land, because it was necessary to give due consideration to proper drainage. Mr. G. A. Vigar preferred to have all the sheds under one roof, particularly in the case of stone buildings. Mr. T. Speed drew attention to the policy of erecting the buildings at some distance from the homestead, in order to minimise the trouble with flies.

**O'LOUGHLIN.**

July 28th.—Present: six members and three visitors.

**FARM MANAGEMENT.**—A paper on this question was read from the *Journal of Agriculture*. It was generally considered that the best method of dealing with the shoots was by securing a good stubble burn. Failing that, it was thought that best results would be obtained by cutting the roots with a slasher. In discussing poultry, members considered the heavy breeds the most profitable. By keeping a few good cows one would be able to practically pay for the supplies for the home. Pigs were also considered a paying side line. Reference was made to the inadequate conveniences usually provided in the kitchen for the women folk of the farm. That was strongly commented upon, and members thought more attention should be given to the design of the kitchen when the house was being erected.

**ROBERTS AND VERRAN.**

August 23.—Present: seven members.

**FALLOWING.**—"All the rubbish growing on land intended for fallowing should be burnt off before seeding," said Mr. Sharman in a paper dealing with the question of "Fallowing." The objects of fallowing were the conservation of moisture and

the destruction of weeds. It was difficult to lay down any hard and fast rules regarding the methods and time of fallowing, but, as a general rule, he thought it was best to commence the work as soon after seeding as possible. From 2½ in. to 3 in. he thought would be deep enough to work the land in that district. If the land set aside for fallowing was exceptionally dirty he thought it was best to use a disc implement. Harrowing and cultivating were the next operations, and these should be done across the ploughing. The final cultivation should not be done at too great a depth, because there was a danger of interfering with the seed bed. An interesting discussion followed in which Messrs. F. Masters and F. Videon took part.

#### SALT CREEK.

August 27th.—Present: seven members.

**BIRD PESTS.**—In a short paper dealing with this subject the Chairman (Mr. W. Fraser) said there were several birds in that district that caused the farmers a great deal of trouble. The eagle hawk was not a very difficult bird to deal with, for it could easily be destroyed with strychnine baits and traps. There were numerous parrots that did damage to the wheat crop, but as a rule they could be frightened off with a gun. He believed that the two birds that caused the most trouble were the sparrow and the starling. The best method for dealing with those birds was to thoroughly clean up a piece of ground and then scatter untreated grain on the land. After that had been done for a few days poisoned wheat could be substituted, and one could be practically certain of killing a large number of the birds. When that plan was adopted one should take care to see that all the poultry were kept shut in while the poisoned grain was lying about.

#### SMOKY BAY (Average annual rainfall, 13.06 in.).

August 7th.—Present: eight members.

**ROAD IMPROVEMENT.**—In a paper dealing with this subject Mr. J. W. Blumson offered the following suggestion as a means of improving the roads in that district. The speaker proposed that each settler should devote one day's work in the year to the clearing of the roads adjacent to his farm. Stumps, stones, and overhanging trees should be cut or removed, and deviations marked out to avoid bad places on the road. The Hon. Secretary (Mr. J. W. Blumson) presented the annual report, and the officers were elected for the coming term.

#### YADNARIE (Average annual rainfall, 14.09 in.).

August 25th.—Present: 14 members and visitors.

**SMALL ITEMS ON THE FARM.**—In a paper dealing with "The Care of Small Items on the Farm," Mr. W. E. Hier said there were many small items on the farm that if properly cared for would result in the saving of a considerable amount of money. In times past many farmers did not take the trouble to make any use of the bags in which they purchased their super. He had found that by turning the bags inside out and soaking them in a bluestone solution they could be used for holding chaff or oats, and would last for quite a long time. The hoop iron that was fastened around the bales of cornsacks could also be used for a number of purposes. The square pieces of iron could be made into washers, and the iron itself could be turned into traces by attaching a small piece of the chain on the end that was fastened to the horses' hames. A length of hoop iron could also be made very useful for drawing a bag lifter. Gate hangers, chaff forks, and bucket handles could also be made from this useful, but often very much neglected, article. If the farmer had a set of stocks and dies he could make use of broken bolts by cutting them down and forming a new thread. The binder twine after it had been cut from the sheaves of hay could be made into ropes for nosebags and also used for mending bags. From the timber of the mallee scrub they could secure spreaders and swings for the teams, and fasteners and timber for gates. Speaking of poultry as a side line, the writer said the fowls could, with proper care and attention, be made a very profitable side line. If the farmer was to provide the birds with a house and run there would not be so many complaints against them for being a nuisance in the stables and among the traps and machinery. The mallee roots could be used for making a poultry house, and in some places he had seen serviceable stockyards constructed with them. Another small point that



often escaped the notice of the farmer was that of keeping the horses' tails pulled. Referring to the conservation of fodders, the speaker said he hoped that farmers would not soon forget the lesson they had had during the last drought. If proper provision had been made for fodder he believed that many of the stock would have been saved. Particularly did he urge them to take more care of the cocky chaff, which could be turned into a valuable fodder in times of scarcity. A good discussion followed. Several members did not favor the plan of using hoop iron for traces, especially when young horses were being worked.

#### YEELANNA.

August 28th.—Present: 15 members.

FENCING.—In the course of a short paper dealing with this subject Mr. A. E. Skipworth said the boundary fence could be erected with pine or gum posts 9ft. apart, with one iron dropper between each post. The fence should be 3ft. 9in. high, with a barb wire on top, and a plain wire, woven through the netting, which should be placed about 4in. in the ground. For the division fence he recommended the following:—Height 3ft. 6in., barb wire on top of the posts, next wire 12in. below the barb, the third wire 8in. from the second, the fourth 7in. from the third, and the fifth 8in. from the surface of the ground. The posts should be half a chain apart with two mallee droppers swung from the top and bottom wires between each post. He thought it advisable to char the posts and tar the droppers to prevent them from being damaged by white ants. Members agreed with most of the points raised by the writer. It was thought, however, that the bottom wire should be placed closer to the level of the land.

CLEVE, August 25th.—Mr. P. J. Smallacombe read a paper, "Land and Land Values," and an interesting discussion followed. Several other subjects were also discussed.

EDILLILIE, August 28th.—The delegates to represent the Branch at the Annual Congress were appointed, and several items of local importance were also dealt with.

KIMBA, August 16th.—The meeting was devoted to a discussion of the resolutions to be brought before Congress, and a committee appointed for a tractor trial to be held early in September.

LAKE WANGARY, August 28th.—The meeting took the form of a "Question Box," when several items of local importance were brought forward for discussion.

MINNIPA, August 25th.—Several matters, including the forthcoming Conference to be held at Minnipa, were brought forward and discussed.

PETINA, July 31st.—Mr. H. Doley contributed an instructive paper on "Clearing the Land of Buck Bush," after which an interesting discussion followed. Arrangements were also made for holding a tractor trial during August. Mr. A. Newbon tabled a model of a gate made from brush timber, which caused a great deal of discussion.

SMOKY BAY, August 28th.—Mr. H. W. Tremaine contributed a paper, "Galvanized Iron for Water Catchment," and an interesting discussion followed.

### EASTERN DISTRICT.

#### (EAST OF MOUNT LOFTY RANGES.)

CLAYPAN BORE (Average annual rainfall, 16in. to 17in.).

August 25th.—Present: eight members.

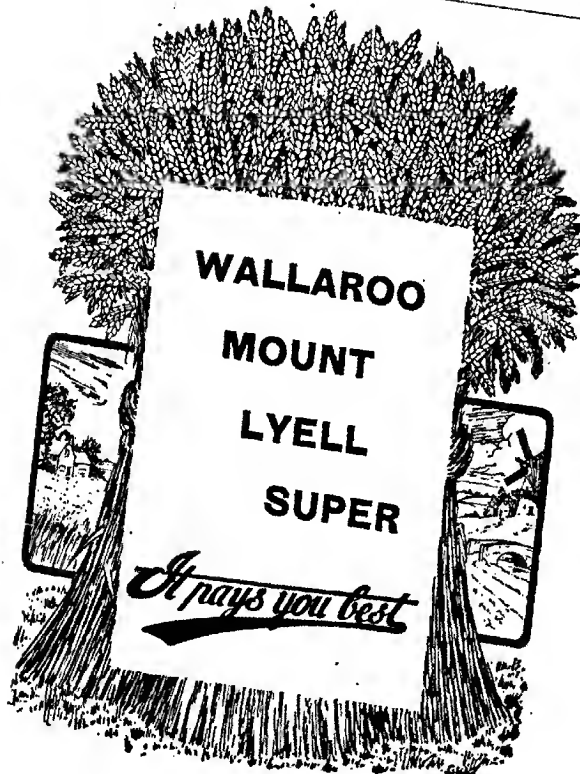
FALLOWING.—"Fallowing is one of the most important operations of all the work connected with the management of the farm," said Mr. M. Robinson in a paper under the above heading. To do the work thoroughly the speaker favored a six-furrow plough, and suggested commencing work as soon after seeding as possible. The plough should be thoroughly overhauled before it was taken into the paddock, and the land worked from a depth of 2½in. to 3in. Harrowing should then be performed, and all the stumps picked off the fallow. If sheep were kept on the holding they should be allowed to run over the fallow, after they had been shorn, to eat the weeds and consolidate the soil. During the latter part of

September or the beginning of October the speaker suggested working the land with a tyne cultivator and a set of harrows, so that as much moisture as possible would be conserved. He was of the opinion that the land roller was an implement that could be used with considerable advantage on the soils of that district, for not only would it help in the formation of the seed bed, but it would also make the land in a better condition to carry a hay crop for cutting. An interesting discussion followed, and members agreed with the main points expressed in the paper.

#### COONALPYN.

August 27th.—Present: eight members and visitors.

WHEAT AND OATS.—In the course of a short address on the question "Can Wheat be Grown as Successfully as Oats in the Coonalpyn District?" Mr. G. Wall said the growing of oats was a better paying proposition than wheat production in that district. There was no doubt that from a grazing aspect oats were to be preferred to wheat; better returns of grain were received, and a much greater bulk of fodder could be taken from a given area. The land could be kept practically free from weeds, and the fact that the oat crop enabled one to secure



better stubble burns made them the most profitable crop for that district. In the discussion that ensued Mr. Cronin said the land intended for oats did not require very much tillage, and that fact explained why wheat had not been grown very successfully in that district. Mr. Cavanagh agreed with the views of the address. Mr. Pitman said oats could be grown with best success in the early stages of reclaiming the land from scrub conditions, as they appeared to withstand the sourness of soil. Mr. Tregenza thought it had yet to be proved that wheat would not give the most profitable results in new districts. A stable market existed for wheat, which was not the case with oats. High yields of wheat would follow proper fallowing and cultivation, but it was important that wheat should be grown in proper rotation with oats.

**POINTS ABOUT THE PLOUGH.**—In a short paper dealing with this subject Mr. P. Angel said two important points in connection with fallowing operations were the selection of a strong team of horses and a good set of harness and swings. The horses should be worked as close to the plough as possible. He believed it would be a great advantage to have the frame of the plough made higher and the bodies wider apart, so that the rubbish and big stumps could pass through more easily. The near-side land wheel on some ploughs often caused a good deal of trouble through being too close to the back body, so that sufficient room was not provided to enable the implement to relieve itself of large stumps and stones. If the wheel was placed a little farther away from the frame the difficulty would be practically overcome. He preferred a spring draught implement, because it would not be so hard on the horses. All nuts should be kept well tightened, and the shares sharpened whenever occasion demanded. In the discussion that followed Mr. Pitman gave various measurements which he thought best for a fallowing plough; 27in. clearance under the frame was suggested, and with long axles and large wheels the machine would work more steadily. He favored spring draught in stumpy land. Mr. Cronin thought a 23in. frame clearance quite sufficient. With a high frame and long bodies the various parts would have to be made very much stronger to carry the additional weight.

#### MERIBAH.

June 2nd.—Present: 10 members.

**CARE OF FARM HORSES.**—Mr. S. H. Pavy contributed a short paper on this subject. The stable, he said, should be closed in to keep the horses warm, and each animal should have its own stall. Six feet should be allowed between each horse, and plenty of time given them to roll before being tied up. In the morning, after taking up the hedding and cleaning out the stable, he would clean the horses with a brush and comb. If foals were bred on the farm the mares should be kept in good condition and not worked while suckling the foals. After weaning, the foal should get the best to eat. He preferred breaking them in when they were about three years of age, but not younger than 2½ years. The young horse should first be taught to lead and tie up. In regard to collars, he preferred them a little on the small side, and lined with check lining for draught work. The horses' teeth should also be attended to. For the treatment of sand in horses he advised giving a dose of soda and milk. Mr. Muller, in opening the discussion, said he was in favor of allowing the horses to run loose, because they would then be able to drink and roll when they pleased. He thought bedding was unnecessary in a warm climate such as theirs. In regard to cleaning the stables, if the horses were allowed their freedom that would only be necessary about once or twice each year, but when they were tied up the stables would have to be cleaned every morning. Mr. Appledore was also in favor of allowing the horses to run loose. Mr. Hank would clean the stables every morning; he thought the horses would then keep their condition much better. Three years, he considered, was the best age at which to break in horses. Mr. Symonds and Mr. Paull also thought three years was the correct age. The colt would then be well grown, and would work harder and longer. In Mr. Symonds' opinion it was unprofitable to let a mare run loose while rearing a foal. Mr. F. C. Tee favored breaking in at 2 years or 2½ years of age, but the animals should only be given light work. At 3 years of age the horses were cutting their teeth, and he was of the opinion that that was a most unfavorable time to break in a horse. He preferred a leather lined collar, because it kept its shape better and needed less repairing.



A Nine Year Old Olive, growing in the Pinnaroo District. The height of the Tree is 14ft.

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MONARTO SOUTH (Average annual rainfall, 14in. to 15in.).

August 21st.—Present: 11 members.

HAY MAKING.—The Chairman (Mr. A. P. Braendler), who contributed a paper on this subject, said if hay was to be fed to the stock without being chaffed it should be cut as soon as the wheat came out in ear. The same should also apply to barley. Oats, however, should not be cut until they were nearly ripe. If one intended to conserve the hay for a number of years it should be cut a little on the green side to minimise the damage done by mice getting into the stack. Stooking should be done directly after cutting, and the stooks made narrow and long. The hay should be left in the paddock for a fortnight, but that, to a large extent, depended on weather conditions. The best method of stacking the sheaves was to keep the stack level until it was about half finished, when the centre should be gradually raised. Finally the stack should be thatched with straw.

ALAWOONA, September 9th.—The first meeting of the above Branch was held in the local hall, when the officers of the Branch and delegates to the Annual Congress were elected.

BERRI, August 30th.—The Hon. Secretary (Mr. W. R. Lewis) read a paper "Vegetable Growing," and an interesting discussion followed. The matter of boxthorn destruction was also brought before the meeting.

BORRIKA, August 28th.—Mr. G. L. Bonython read a paper "Starting a Farm Garden," and also gave a practical demonstration of pruning and budding.

BRINKLEY, August 28th.—Messrs. Martin and Lemmy gave a report of the very successful homestead meeting that had recently been carried out under the auspices of the Hartley Branch of the Agricultural Bureau.

COOMANDOOK, August 28th.—The delegates for the forthcoming Congress were appointed, and a discussion took place on the Loans for Fencing Act.

LONE GUM, August 24th.—Mr. W. E. Muspratt read an instructive paper, "Care of Young Trees and Vines," and replied to numerous questions in the discussion that followed.

MYPOLOGA, August 25th.—Mr. H. J. Apps (Assistant Dairy Expert) attended the meeting and delivered a lecture on "Herd Testing."

NETHERTON, September 1st.—The monthly meeting of the Branch was held in the local hall, when several questions of local importance were brought forward and discussed.

PARRAKIE, August 28th.—The Hon. Secretary (Mr. F. W. Gravestocks) delivered a short address on "The Benefits to be Derived from Membership of the Agricultural Bureau," and urged members to take a keener interest in the work of the Branch.

PARUNA, May 28th.—Mr. O. Polkinghorn contributed an interesting paper, which was discussed by the members.

ROSY PINE, August 25th.—The meeting discussed the question of "Afforestation," and several questions of local interest were brought before the members.

WILKAWATT, August 28th.—The delegates to the Pinnaroo Line Conference, Messrs. W. J. Bowman, F. R. Koch, and E. A. Alters, gave a report of the proceedings at that gathering, and a discussion followed. The resolutions to be brought before the forthcoming Congress were also discussed.

## SOUTH AND HILLS DISTRICT.

### BLACKHEATH.

August 28th.—Present: eight members and two visitors.

CARE OF SKINS.—In the course of a paper under the heading "Care and Management of Skins," Mr. W. G. Pym first referred to the treatment for sheep skins. The wet skin, he said, should be hung over a straight piece of wood or iron in the shade. The skins also dried well if laid out flat on the floor, but there was always a danger of eats and mice damaging the pelt when that was done. For handling fox skins he suggested pegging the skin by putting a nail through the nose and then a nail in each of the hind legs. The skin should be tightly stretched out and other nails driven through the edges of the skin, each about 4 in. apart. The front legs should also be pulled out straight and pegged on to the board. The fat should always be cut off all skins to allow them to dry quickly. A good plan when dealing with opossum skins was to allow the body to cool for a while before attempting to take off the skin. By doing that one avoided the possible danger of pulling the fur off the pelt. Rabbit skins should always be sleeved on straight pieces of wire and dried in the shade. Opossum and fox skins should be brushed before sending to market to give them a nice appearance; and all skins should always be packed with the fur against the fur to prevent the grease from coming into contact with the fur.

CLARENDON (Average annual rainfall, 33.67 in.).

June 28th.—Present: 18 members.

Mr. S. White (an old member of the Branch) gave an interesting address of his experiences since leaving Clarendon. At the annual meeting, held on July 26th, the Hon. Secretary (Mr. T. B. Brooks) presented the annual report, and the officers were elected for the ensuing term.

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## IRON BANK (Average annual rainfall, 33in. to 34in.).

August 28th.—Present: six members.

HOW TO MANAGE YOUNG HORSES.—Mr. W. Slater read a paper on this subject, and a good discussion ensued. In reply to a question as to what was the best age at which to break in the colt he said he made a practice of first handling the young horse when it was about three years old, but as a rule the colt was not put to hard work until five years of age. In reply to a question as to the best plan to adopt for the prevention of sore shoulders, the writer of the paper stated that if the shoulders of the young horses were bathed with a solution of salt and water after each day's work it would prevent them from scalding.

## LENSWOOD AND FOREST RANGE (Average annual rainfall, 35in. to 36in.).

July 28th.—Present: eight members and six visitors.

HOMESTEAD MEETING.—The monthly meeting of the Branch was held at Mr. R. E. Townsend's homestead. An enjoyable afternoon was spent inspecting the orchard and farm machinery. Afternoon tea and vocal items were provided by the ladies.

AFFORESTATION.—At a further meeting held on August 28th Mr. F. Rowley read a paper, "The Necessity for Adequate Forestry in South Australia." The speaker prefaced his remarks by drawing attention to the timber shortage of many countries of the world, and quoted figures illustrating the amount of timber imported into Australia. It was stated that in the Adelaide Hills one had a good illustration of the damage done to timber by bush fires and thoughtless destruction, and he believed that many of those areas could be regenerated. Forest plantations could also be carried out on scientific lines in the city park lands. One of the most noticeable effects of the timber devastation in the hills was the washing of immense quantities of good soil into the washouts leading to the rivers and creeks. There was always the danger of floods, but the speaker believed the damage could be kept at a minimum, if the timber was kept under proper management and control.

## LONGWOOD (Average annual rainfall, 37in. to 38in.).

July 24th.—Present: 12 members and one visitor.

HOMESTEAD MEETING.—The monthly meeting of the Branch was held at the homestead of Mr. J. R. Coles, and after an inspection of the orchard and a pruning demonstration had taken place Mr. Woolcock read a short paper entitled "Back Yard Gardens," in which he outlined the necessity for co-operation among market gardeners and fruit growers to prevent dumping, and to study better ways and means of distributing the produce.

## MILANG.

July 10th.—Present: 28 members.

ANNUAL MEETING.—The Hon. Secretary (Mr. J. P. Bagley) read the annual report, and the officers were elected for the ensuing 12 months.


At a further meeting held on August 12th the Poultry Expert (Mr. D. F. Laurie) attended the meeting and delivered a lecture "The Poultry Industry."

## URAILDA AND SUMMERTOWN (Average annual rainfall, 44.35in.).

July 5th.—Present: eight members.

Mr. Sharp read a paper "Dry Gardening," and an interesting discussion followed.

SAVING SEED.—At a further meeting held on August 2nd a member read a short paper dealing with the saving of garden seeds. The writer advocated the practice of saving seed from all the crops grown in the garden. The seed should be saved every year, and he strongly favored grading. The paper was concluded by a reference to the carelessness of many gardeners in leaving their implements and tools out in the weather, several suggestions were offered for the better care of the machines.



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CHERRY GARDENS, August 24th.—Mr. D. M. Ricks contributed an interesting paper "Impressions of Port Lincoln and Surrounding Districts." The question of effectively dealing with the destruction of boxthorn was also brought before the meeting.

LONGWOOD, August 21st.—The monthly meeting of the Branch was held at Mr. R. H. A. Lewis's homestead, when a demonstration of bark, strap, and tongue pruning was carried out. Several subjects of local interest were also brought forward for discussion.

MORPHETT VALE, August 27th.—Mr. C. H. Beaumont (Orchard Instructor and Inspector) visited the Branch and delivered an address "Orchards and Orchard Work." Matters relating to the forthcoming Hills Conference were also discussed.

MOUNT, BARKER, August 25th.—Mr. Storey gave an interesting address on "Flax-growing and Manufactured Products" to a large attendance of members and visitors.

#### SOUTH-EAST DISTRICT.

GLENCOE (Average annual rainfall, 33.84in.).

June 17th.—Present: 14 members.

BUREAU TOPICS.—Mr. A. B. Carthew contributed a paper on this subject. The object of the Bureau, he said, was for members to gain knowledge by the exchange of ideas or practices between one another, and also between the expert and the farmer. The Department did everything in its power to advance



the knowledge of the farmer, and it was their duty to endeavor to gain that knowledge by all the means in their power, and also to help the other members to gain it. There was no doubt that the Bureau was doing a great deal of good in stirring up interest in agriculture, which was the most important industry in this State. Agriculture had greatly improved during the last few years, and that, he thought, was due indirectly to the Bureau. During the discussion which followed, Mr. M. D. Cameron spoke of the advances made in agriculture, and the need for farmers to be observant and progressive.

#### KONGORONG.

August 26th.—Present: 11 members and visitors.

**CO-OPERATIVE THRASHING MACHINE.**—The Hon. Secretary (Mr. E. E. Morrison), in a paper dealing with this subject, said co-operation had made wonderful progress in many industries during the past few years. If the primary producers were to keep abreast of the times he believed they should take steps as soon as possible to outline a scheme whereby most of the requisites needed for the working of the farms could be purchased at wholesale rates. He had written the paper with a view of bringing before the meeting a suggestion for the instalment of a co-operative thrashing machine. If that could be done he believed they would receive a better price for their oats, because the grain would be marketed early in the season. In addition, the grain could be thrashed in the stook, which would eliminate the expense of stacking and a good deal of hired labor, and, combined with the thrasher, they would have a chaff cutting plant. He was firmly convinced that the machine would very soon pay for itself if the farmers adopted the suggestion and carried the scheme out on strict business lines. An excellent discussion followed, and it was decided to call a public meeting later on in the year to give earnest consideration to the proposal.

#### MOORAK.

August 26th.—Present: 17 members.

**SUMMER FODDERS.**—Mr. K. MacIntosh read the following paper:—"In dealing with this subject, I intend touching only those fodders most familiar in this district, so that any discussion that might ensue will be for our mutual benefit. First in popularity comes chow moellier, which is planted in springtime in rows from 3ft. to 4ft. apart, and from 2ft. to 3ft. between the plants. The leaves are ready to strip in about four months from time of planting, and the operation can be continued right into the winter, when the stalks are pulled, and either pulped or chopped up for the cattle. This plant, I believe, gives more fodder to the acre, and lasts over a longer period, than any other fodder grown without irrigation. It is a good milk producer, is little affected by frost, and is a wonderful drought resister. But it is said to taint milk if fed immediately before milking. Next comes maize, which involves less labor in planting and feeding, but has the disadvantage of being sensitive to frost, and is not a good milk producer. But for feeding to dry stock and for keeping cows in condition it has no equal, and being easier and more convenient to handle than chow moellier it is well worth while to grow a few acres, especially for pig food, as there will be an abundance of cobs for the purpose. Next in importance comes mililot. I find this to be absolutely the best milk producer of all in summer. It can either be cut or grazed. The cutting, of course, is the better plan, but where time is of more consequence than economy, the grazing will not injure it to the extent one would imagine, as it will persistently come again if given a few days' spell." An interesting discussion followed.

#### MOUNT GAMBIER (Average annual rainfall, 32in.).

August 14th.—Present: 15 members.

**BENEFITS TO BE DERIVED FROM MEMBERSHIP OF THE AGRICULTURAL BUREAU.**—Mr. G. T. Gurry read the following paper:—"In submitting this paper for the consideration and criticism of members my object is to endeavor to draw atten-

tion to a few of the many benefits to be gained by becoming a member of, and actively supporting, a Branch of the Agricultural Bureau. The first question that will naturally arise will be.—Is it worth while? Is anything to be gained by joining a Branch? I have no hesitation in saying that there can be no two opinions as to the real value of the Bureau system as a medium for mutual improvement. Anyone who gives the matter the slightest consideration will agree that there are many ways by which it confers direct benefits, not only to members, but to a district in which a Branch is established. All of us, I feel sure, will agree as to the value of knowledge and experience in all or any of the various rural pursuits incidental to work on the land. Especially is this so at the present time, when the advantages of modern ideas and methods are being more clearly recognised, and systems which have served their purpose in the past are becoming out of date. The reading of a paper at a meeting may in itself be but a small matter, but it affords an opportunity for the discussion of a wide range of subjects of mutual interest. Thus farmers may profit from each other's experiences. Whilst a man is always anxious to acquire knowledge he should be generous enough to pass on to others anything likely to be of benefit to them. Another advantage, and a most important one, is that a district in which a Branch is established is brought into more direct touch with the departmental experts. The Branch really forms a connecting link. The fact that Branches of the Bureau are found in practically all the producing districts of the State, with a membership of nearly 6,000, is conclusive proof that the primary producers are alive to its advantages. A matter of considerable interest are the experiments conducted by the Department of Agriculture through the agency of the Bureau. Of chief interest to our Branch are the plots in our own district. In some cases these have perhaps not been as satisfactory as we would have wished; but that is no reason for condemning them as a 'waste of time,' because experiments are bound to result in occasional



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failure as well as success. In either case a lesson can be learned, and perhaps encouragement given to individual effort. We do know, however, that some of the more recent experiments have given highly satisfactory returns, and may perhaps result in the establishment of new and profitable industries, that would be a benefit to the district and to the State. I refer chiefly to the growing of sugar beet and flax. The annual district conferences of Branches are also of considerable interest, and of educational value to members, who, by coming together in this way, are enabled to discuss matters of vital interest. They also provide a valuable object lesson in regard to the products of the different districts, and are well worth supporting. That the educational value of the Bureau system is acknowledged by the press is made evident by the fact that many newspapers, not only in our own, but in other States, reprint articles from the *Journal of Agriculture*, and no doubt with considerable benefit to many of their readers. The publication of these articles, let it be remembered, is only made possible through the instrumentality of the various Bureau Branches. We are reminded from time to time that membership carries with it responsibility as well as privilege, but perhaps some of us do not take the first dictum too seriously. It is clearly the duty of every member of a Branch at some time or other to do something towards providing the programme for a meeting, either by the reading of a paper or some other useful way. By doing so they are helping towards strengthening their Branch, whilst neglect on their part will possibly have an opposite effect. Moreover, such is altogether unfair to the Branch secretary. A member who contributes a paper need not feel discouraged if the opinions expressed in the discussion do not coincide with his own views. There are many ways by which the usefulness of the Bureau may be extended, and membership made a pleasure as well as a benefit. That the Agricultural Bureau of South Australia has fully justified its establishment, and that it may be looked upon to-day as a necessary and valuable public institution can admit of not the slightest doubt. Members, by actively supporting their own Branch, can render it of maximum value to all of them."

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NARACOOORTE (Average annual rainfall, 22.60in.).

August 14th.—Present: 23 members.

**LIVESTOCK ON THE FARM.**—In a paper under the heading "The Advantages of Livestock on the Farm" Mr. J. J. Donoghue claimed that the horse was one of the most useful of all farm animals, and, in spite of the fact that one often heard it remarked "that the day of the horse is past," he believed that the horse would for some considerable time be the chief method of draught for the man on the land, and that it would pay to breed a few good animals every year. Speaking of the dairying industry, the writer believed dairying to be one of the best payable propositions for the man with only a limited area of land. There was no doubt that sheep were a very profitable form of livestock to have on the farm. In addition to providing the household with meat, a good price could be obtained in the market for the carcass, and the fleece also could be disposed of for a good price. Again, they were a valuable means of keeping the land free from weeds and adding manure to the soil. He did not think farmers paid sufficient attention to the keeping of pigs. The skim milk and many other waste products of the farm could be profitably used as pig food. Reference was also made to the advisability of keeping poultry. An interesting discussion followed.

# CROWN LANDS.

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## LANDS OPEN FOR APPLICATION.

A large area in the Central District, also blocks in Berri, Cobdogla, Kingston, Moorook, and Waikerie Irrigation Areas are now gazetted open for application until the 19th October, 1920.

Full particulars are published in the *Government Gazette*, or may be obtained, with plans on application to the Secretary for Lands, Adelaide.

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## LANDS TO BE OFFERED SHORTLY.

Additional allotments in the town of Whyalla (Hummock Hill) will be offered at auction at an early date.

Full particulars will be published in the *Government Gazette*, and plans will shortly be available on application to the Secretary for Lands, Adelaide.

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## APPLICATIONS FOR LAND.

Intending applicants for any lands which are open are reminded that application may be made for the whole or any portion of a block. The Land Board has power to allot portion of a block, if considered advisable, and to adjust the purchase-money or rent. If only portion of a block is applied for, deposit of a proportionate amount must be made, and the successful applicant would be required to pay cost of survey.

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## ALLOTMENTS, SALES, TRANSFERS, SUBLEASES, AND MORTGAGES.

Notice is hereby given that in future no applications for land, or for transfer, sublease, or mortgage of Crown leases or agreements will be approved to unnaturalised persons of any nationality, or to naturalised persons of enemy origin unless the consent of the Honorable the Attorney-General of the Commonwealth be first obtained by the parties making the application.

Where any doubt as to nationality exists, it will be necessary for certificate of birth or naturalisation papers to be exhibited.

The same principle will apply to land sold by auction.

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## OFFICIAL LIST OF LANDS OPEN.

The attention of intending applicants for land is directed to the Official List of Lands Open, which may be seen at the principal Post Offices, and copies obtained at the Office of the Secretary for Lands. The List shows the Areas, Localities, Prices, &c., of the Sections available and the conditions under which they may be applied for.

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*Commissioner of Crown Lands and Immigration.*



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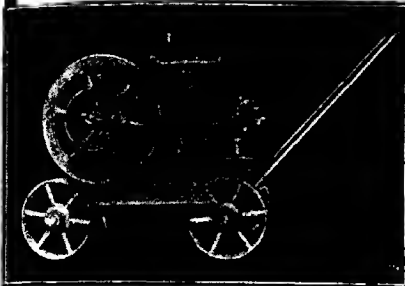
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will eradicate insects and diseases at the one operation. It also gives vigour to the trees, strengthens the blossoms, and ensures sound, clean fruit.

Fungol is packed separately but must be used with GARGOYLE SPRAYING OIL.

EASY TO MIX.

EASY TO USE.



If not obtainable from your Storekeeper, write direct to us.

**SPRAYING OIL**  
♦ Destroys Insects ♦

**FUNGOL**  
Destroys Diseases

Write us for free descriptive booklet, "The Care of Your Orchard."

VACUUM OIL COMPANY PTY. LIMITED.

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## Roseworthy Agricultural College.

WALTER J. COLEBATCH, B.Sc. (Agric.), M.R.C.V.S.,  
Principal.

### SUBJECTS:

Agriculture, Veterinary Science, Dairying, Aviculture  
Viticulture, Wine-making, and Fruit Culture.  
Chemistry, Mathematics, Botany, English, Book-keeping.  
Surveying and Wool-classing.  
Manual Practice on Farm, Vineyard, Orchard, and in Dairy,  
Wine Cellars, and Farm Workshop.

### FEES:

£30 per annum (including board and lodging) and £1 for  
medical fees, payable *pro rata* at the beginning of each  
session.

### SCHOLARSHIPS:

Six, each valued at £90, open for competition annually.

### SESSIONS:

The course of study extends over nine sessions, or three years.  
The FIRST SESSION of each year begins on or about the third  
Wednesday in April and closes on or about the third  
Friday in July.  
The SECOND SESSION opens on or about the second Tuesday  
after the close of the first session and closes on or about  
the second Friday in October.  
The THIRD SESSION opens on or about the second Tuesday after  
the close of the second session, and closes at the comple-  
tion of the vintage.

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*Applications for Prospectus and information should be addressed to—*

THE SECRETARY,  
AGRICULTURAL COLLEGE,  
ROSEWORTHY.

